JPRS-UMA-95-008
28 February 1995


# JPRS Report

# Central Eurasia

## Military Affairs

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*JPRS-UMA-95-008* *28 February 1995*

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## CHECHNYA

### Korotchenko Review of Operations in Chechnya

*95UM0289A Moscow NEZAVISIMOYE VOYENNOYE OBOZRENIYE (supplement to NEZAVISIMAYA GAZETA) in Russian No 1, Feb 1995 pp 1-2*

[Article by Igor Korotchenko, under the rubric: "Survey": "The Operation in Chechnya: Success or Defeat of the Russian Army?"]

[FBIS Translated Text] The introduction of a unified force of RF Armed Forces and MVD [Ministry of Internal Affairs] internal troops units into Chechnya is undoubtedly the largest military action undertaken on the entire post-Soviet space after the end of the war in Afghanistan and the withdrawal of the 40th Combined Arms Army from there. Although Russian Minister of Defense General of the Army Pavel Grachev stated that he was prepared to restore order in Groznyy within days using the forces of only one airborne regiment, nevertheless an army corps, several divisions, composite brigades and regiments, airborne forces of the North Caucasus Military District, and also special purpose, rear services, communications and electronic warfare units have been involved in the pacification of Dzhokhar Dudayev. It appeared that General Dudayev's illegal armed formations would not be able to withstand the power of the federal troops and no more than 10-15 days would be required to defeat the Chechen guerrillas. However, the Russian Army has been conducting fierce battles already for two months now and has still not managed to seize all of Groznyy and has barely closed a ring around it. Total irrecoverable losses are approximately 1,200 soldiers and officers. As a result, negative attitudes have increased in society and critical statements against the RF Ministry of Defense and its leadership are being heard more frequently. So, who is responsible for the situation that has developed? What was the primary cause of such painful defeats?

In the autumn of last year, it finally became clear to the Kremlin that a peaceful resolution of the Chechen problem was already impossible. Dudayev unambiguously made us to understand: recognition of Ichkeriya's independence is a main condition for the normalization of relations with Russia. Groznyy was increasingly involving itself in the sphere of Moscow's foreign policy interests, while claiming a role as a regional leader and hatching plans to create a new state formation—the Islamic Conference of the Republics of North Caucasus.

In accordance with the instructions received from President Boris Yeltsin, in October 1994 Pavel Grachev directed the formation of a General Staff operational team on Chechnya which consisted of officers and generals of the General Staff's 1st Directorate of the Main Operational Directorate. They were assigned the task of developing scenarios of possible variants of the development of events with the utilization of forceful methods of pressure on Chechnya, including the direct introduction of troops and their participation in combat operations. Furthermore, the operational team was tasked with the functions to coordinate the activities of the FSK [Federal Counterintelligence Service], MVD [Ministry of Internal Affairs], border troops and the Ministry of Defense on the territory of the North Caucasus Military District during the course of planning and preparing for an invasion operation and gathering and analyzing information on the strength, deployment and arms of the Chechen formations. Lieutenant-General Anatoliy Kvashnin, first deputy chief of the Main Operational Directorate, headed the team's work. A General Staff directive, signed by Colonel-General Mikhail Kolesnikov, defined the missions of the North Caucasus Military District Headquarters to increase personnel strength and equipment of units that were planned for participation in the impending measures.

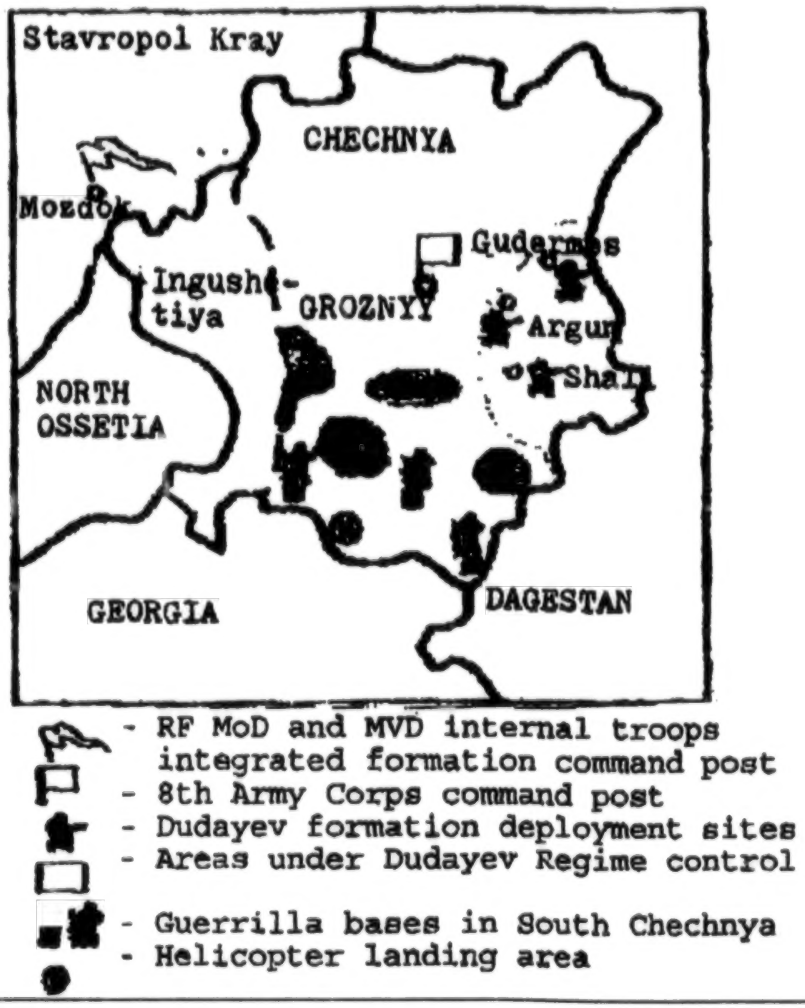
The Federal Counterintelligence Service worked in concert with the General Staff. The FSK leadership proposed using armed detachments of the opposition as a battering-ram during the strike against Dudayev's citadel, having reinforced them with Russian armor with crews of volunteers-contract servicemen during the period of the storming. After the fall of the Chechen capital, it was assumed that the Chechen Republic puppet government of national salvation would utilize a special decree to legalize the introduction of RF regular troops and would call upon the local population to render all possible assistance to them, thereby reducing to a minimum possible casualties among servicemen and peaceful citizens. As for Dzhokhar Dudayev, he was supposed to repeat the fate Khafizulla Amin who was shot during the storming of the Presidential Palace in Kabul. We all know what turned it into the hasty and unprepared November 26 storming of Groznyy that was undertaken by the detachments of Beslan Gantemirov, Ruslan Labazanov and Umar Avturkhanov. The FSK's failed secret operation had the effect of a cold shower in Russia's power structures and force ministries. The Chechen president showed Russian prisoners—dirty, pitiful, bewildered and dressed in ill-fitting uniforms that looked like rags with shoulder boards and rank removed (but with military identification cards and officer identification cards in their possession!)—to the entire world, and the prisoners repeated without complaining their confession to the video camera lenses. The inevitability of combat operations with the participation of federal troops became obvious. All of the Kremlin's subsequent ultimatums and statements with the prolongation of the time periods had only one purpose—to provide time for the large-scale deployment and mobilization of North Caucasus Military District ground forces units.

The 48 hours that the president of Russia had given Chechnya to disarm the illegal armed formations had still not expired when Russian Air Force aircraft began to conduct missile-bomb strikes against Chechen airfields. The lack of trained pilots with the required flying hours in North Caucasus Military District aviation line units compelled Air Force Commander-in-Chief Petr Deynekin to utilize Su-25 and Su-27 squadrons of the Flight-Test Research Center at Akhtyubinsk—a decision that was certainly correct but also forced. So, Dudayev was totally deprived of combat and transport aircraft already prior to the initiation of the ground operation. However, we must note that the air operations were sometimes unsystematic

in nature. Russian generals had poorly mastered the lessons of the Persian Gulf War. First of all, they should have destroyed Chechnya's administrative and military command and control facilities, communications hubs, and key elements of the infrastructure. In practice, they bombed housing areas and the outskirts of Groznyy instead of the presidential palace and the television center. For example, what prevented them from conducting a massive strike against Dudayev's palace at night when a large portion of the people who rallied around him would be dispersed in their homes? One can submit many complaints against the intelligence directorate of the North Caucasus Military District headquarters which could not organize the receipt of timely and reliable data using agent sources and technical reconnaissance systems.

The General Staff began to airlift additional forces, including the Pskov Airborne Division and motorized rifle regiments from the Moscow and Volga military districts, to augment the troop formations already concentrated on the border with Chechnya. At the same time, the time periods of the operation, the troop movement routes, and times for passing control points on them were made more precise.

On the morning of December 11, federal troops began the offensive along three axes: from North Osetia, Ingushetiya, and Dagestan. The absence of coordination between the army and the internal troops had an immediate impact. Local residents managed to block the advance of some columns, while destroying armored and motor vehicles. Such cases were noted primarily in Ingushetiya (in the areas of Nazran, Voznesenskiy, and Novyy Redant) on the first day of combat operations. In the area of Khasavyurt, having stopped a column of armored vehicles, a crowd managed to seize 59 servicemen as hostages. The soldiers did not open fire because there were women and children among the peaceful population and there was no special equipment to disperse them. The first combat clash between Chechen detachments and VDV [Airborne Troops] subunits occurred on December 12 near the village of Dolinskiy. A helicopter that was covering the column detected a "Grad" multiple rocket launcher system that was deployed on the terrain but, instead of destroying it, it began to query the ground command post. The Chechens managed to take advantage of the confusion and fired at the lead BMDs [armored personnel vehicles] using direct laying.



Stubborn resistance was offered to Russian units near the populated area of Chervlennaya where an armed formation with a strength of over 1,000 men was operating. The guerrillas intruded into army command and control and coordination radio nets, disrupted their operations and issued false target designations to ground attack aircraft. The rates of advance were lost, confusion reigned, and soldiers and officers did not have precisely formulated missions. Rear services couldn't keep up with line units and there was no hot food, sleeping bags or warm clothing. Approximately 100 (!!!) Moscow generals, causing the animosity of trench officers and soldiers through their incoherent commands, arrived in Mozdok where the district field command post was deployed and from where command and control of the expeditionary forces was carried out. The inability of the North Caucasus Military District command authorities to conduct actual combat operations became the primary reason for the removal of the military district commander and chief of staff from their positions. General Kvashnin began to command the group of forces.

Having taken up a position near Groznyy by the beginning of December and having surrounded the city on three sides, the Russian Army had practically completed the first phase of the operation. A total blockade of the Chechen capital with the conduct of precision strikes against military facilities and masses of guerrillas appeared to be the ideal variant. The absence of the experience of conducting street battles under city conditions and the lack of training of personnel who were seeing assault rifles for the first time in their entire period of service also spoke in favor of that argument. Therefore, the name of the man who issued the order to storm Groznyy on the night of January 1, 1995 remains a riddle until now. The monstrous numbers of losses graphically characterizes its consequences.

Having been drawn into street battles, the Russian Army has been conducting them for an entire month now while gradually grinding up the Dudayev forces and seizing house after house and quarter after quarter. There's no doubt that the city will fall. The question is only what price will have to be paid to do that. For now it is exorbitantly high.

Just how can one assess the combat operation in Chechnya? I think that it is still too early to arrive at a final conclusion. Ahead are spring and summer—the time of the greatest activity of the guerrillas when one can find cover both in the mountains and on the plains. One thing is clear: escalation of the conflict is inevitable and the intensity of combat operations will hardly subside with the seizure of Groznyy. Hastily developed plans and poor preparation of the troops involved have created a situation from which it will be very difficult to emerge. But there are no hopeless situations.

It seems to me that in the next few months it would be advisable to:

1. Dramatically increase the role of special troops and, first of all, electronic warfare units. In addition to the REB [Electronic Warfare] regiment deployed at Mozdok, airlift similar units from MVO [Moscow Military District], LenVO [Leningrad Military District] and DVO [Far East Military District]. Plan and carry out the suppression of the combat command and control channels of the Chechen formations that have been detected. Deprive Dudayev of all types of communications, blind his headquarters, disrupt command and control, and create a total information vacuum. In mountainous terrain, try out the installation of remotely controlled portable jammers near guerrilla bases. Carry out suppression of the satellite communications channel that is being utilized by Dudayev to access the leaders of the Islamic countries and Islamic organizations abroad.

2. Train, equip and air drop in the rear of the Chechen formations GRU [Main Intelligence Directorate] spetsnaz [special forces] raiding and reconnaissance parties to destroy enemy personnel and equipment, to conduct tactical reconnaissance, and to organize sabotage of transportation lines of communication and engineer structures. Conduct actions to capture or destroy guerrilla leaders. Announce that the subunit that captures Dudayev dead or alive will receive a substantial monetary reward, for example—in the amount of $500,000—for his head. It is impossible to stimulate the readiness of Russian Spetsnaz to risk their lives with just promises, appreciation or certificates of award under conditions of a market economy.

3. With the establishment of favorable weather conditions, aggressively utilize aircraft to the maximum extent possible to conduct strikes against the guerrillas utilizing self-guiding precision-guided weapons. Destroy the defensive positions of Dudayev's supporters in mountainous terrain and in the southern areas of Chechnya. Demoralize the enemy with continuous air raids. Destroy transportation lines of communication across mountain passes and mountain roads and prevent the arrival of mercenaries and arms caravans from Georgia.

4. Force tactics of operations upon the enemy that are disadvantageous for him. Having equipped raiding parties with modern compact night vision devices and infrared gunsights, try out the conduct of operations primarily at night. Mine guerrilla withdrawal routes from the air while cutting off their paths of retreat and totally destroying them in the event of the refusal to lay down their arms.

5. Begin the recruitment of contract servicemen who have war experience in Afghanistan at RF oblast, city and rayon military commissariats. Form independent subunits using contract servicemen and exclude compulsory service military personnel from joining these units.

6. Stop sending composite units to Chechnya that have been selected by company from various regiments and divisions. There's no sense in doing that. Losses will exceed average statistical losses by a factor of 2-3 while subunit combat teamwork training is occurring. If troops are sent to the Chechen front, then it's better to send a full-fledged division or brigade that has been totally manned to its wartime TOE and has been provided time for preparation. The Moscow suburbs

are full of elite units. Not all of them are needed to fire at pointblank range at our own parliament, let them smell gunpowder under actual conditions of a combat situation. Send the Taman (2nd Motorized Rifle Division) and Kantemirovka (4th Tank Division) divisions with attached support units, the 27th Motorized Rifle Brigade, and the 119th Airborne Regiment to Chechnya. These are full-fledged and trained formations and units that are capable of conducting modern combined arms warfare.

The most rapid resolution of the Chechen crisis meets the interests of both the army itself and of Russia as a whole. Spring-summer 1995 must finally show how the RF Armed Forces stand. And for now we will have to respond in the negative to the question posed in the headline. It's another matter that there are also political causes, the analysis of which are beyond the framework of this article.

## MILITARY POLICY

### Review of Duma Defense Budget Debate

*MM2402112895 Moscow KRASNAYA ZVEZDA in Russian 22 Feb 95 p 1*

[Article by Vladimir Yermolin: "Will State Duma Ratify Damaging Defense Budget? Or Will State Interests Prevail? Today, 22 February, the Third Reading of Draft Law on the Federal Budget for 1995 Is On the Agenda for Russian Federation State Duma"]

[FBIS Excerpted Text] I would remind our readers that the government draft budget for national defense in 1995 plans to spend 45,274,901,800,000 rubles [R] on national defense. As a comparison—last year the Law on the Federal Budget obliged the government to allocate R41.6 trillion for defense needs. As is well known, even this sum—a trivial amount compared to the scale of the tasks facing the Russian Armed Forces—has not reached the military department's coffers. The military have suffered a R12 trillion shortfall. And now a new federal summary of state income and expenditure is coming to fruition in which national defense has a place too.

Before the third reading, the Defense Committee, mainly in the shape of Aleksandr Piskunov, made a desperate attempt to make the defense budget correspond at least minimally to the real expenditure on maintaining the country's defense capability. It was proposed that the Armed Forces' funding be increased to R51.6 trillion. But in the course of work on amendments **the parliamentary Committee for the Budget, Taxes, Banks, and Finances (chairman Mikhail Zadornov of the "Yabloko" faction) believed that the Army could make do with R45 trillion. Moreover, as we have already reported, the committee decided to cut spending on maintaining formations of all systems for the state's defense by R1 trillion.** We can only speculate as to the considerations which motivated the deputies of the main parliamentary committee for work on the federal budget and the initiator of the "Yabloko" faction proposal, who considered it essentially superfluous to be spending money on the actual defense of the state.

Incidentally, these considerations proved, quite bluntly, to be modest—having taken R1 trillion from a single defense line-item, the committee specialists divided it equally between two other defense items. It is proposed to spend R500 billion each on maintaining R&D and on acquisitions of arms and military hardware. The wisdom of Solomon.

There is, admittedly, some relatively good news. There seems to be no objection to including pay and the provision of food in the list of protected items. Nor has the amendment to set up a special budgetary fund (account) to maintain the Armed Forces been rejected yet. The main revenue should be raised from sales of military property, equipment, and weapons, and from the provision by the Defense Ministry of certain services to the national economy. In particular, the Russian Space Agency has to pay R13 billion for each launch of a Proton rocket. And there are more than 10 such launches in a year. There should be an amendment to the investment programs on housing, envisaging the targeted allocation of R1.4 trillion to build housing for servicemen and those discharged into the reserve. Admittedly, as Aleksandr Piskunov put it, no trace of this money is yet visible in the budget.

With difficulty and desperately overcoming "memory lapses," the Finance Ministry nonetheless remembered that it owed the Defense Ministry a "certain amount" for last year. A month ago the finance minister was talking at a State Duma session about "2 or 3 trillion, but no more." The Finance Ministry has now agreed to recognize its debt to the military department—R6.7 trillion. That is progress. But it is interesting that only R2 trillion of this sum will be used to compensate the defense industry—compensation which is long overdue, since it has been conscientiously carrying out last year's state orders. What will this R2 trillion resolve if the remaining R10 trillion (the government, I would reiterate, owes the military, according to the Defense Ministry, R12 trillion) continues to be a millstone round the Army's neck? Who wants to have any dealings with a department that cannot pay its bills? And that is the kind of impecunious customer that the Defense Ministry—or, rather, the entire Russian Army—is year in, year out. The situation is even more incomprehensible if we bear in mind that back on 29 December 1994 Russian Federation President Boris Yeltsin instructed the government "to pay off the state's debts under defense orders in 1994 as much as possible, and to completely pay off the money owed for R&D." The president's instruction has remained unfulfilled. Hope now rests with the Defense Ministry. **We would like to hope that the State Duma deputies will not vote for a budget that makes no provision for payment to the Armed Forces of the full amount owed. Saying "yes" to the government version of defense spending would mean saying "no" to a worthy future for the Russian Armed Forces.** At any rate, the Communist Party of the Russian Federation, Liberal Democratic Party of Russia, and Democratic Party of Russia factions, a number of "Russia's Choice" deputies, and the "New Regional Policy" deputies' group have proposed that the Budget Committee take account of the need to fully pay off the Russian Federation Defense Ministry's debts for 1994 as a binding condition for resolving the defaulting problem in the country as a whole. The final vote will show just how consistent this position will prove to be.

## Suggested Policy Concept for Nuclear Strategy

*95UM0293A Moscow NEZAVISIMOYE VOYENNOYE OBOZRENIYE (Supplement to NEZAVISIMAYA GAZETA) in Russian No 1, Feb 1995 p 3*

[Article by Lev Volkov: "The Russian Federation Nuclear Strategy"; "How Many Nuclear Missiles Are Sufficient for National Security?"]

[FBIS Translated Text] As one of five nuclear powers, Russia must have a precise policy in the field of nuclear weapons. Two variants of this are possible.

**First.** Russia and the U.S. have a significantly higher number of highly effective nuclear weapons than France, Great Britain, and China, assuring deterrence of one another and of all the other nuclear powers from aggression, and also from military-political pressure leading to worsening of the economic situation of the country (economic blockades and restrictions, ousting from sales markets and so forth).

**Second.** Russia unilaterally reduces its strategic nuclear forces (SYaS) to a level at which deterrence of the U.S. is impossible, and its number of nuclear weapons is comparable to the nuclear potentials of France, Great Britain and China.

### Plan as We Must, Do as It Turns Out

At first glance the two variants of development of the Strategic Nuclear Forces are divided only by the number of weapons which we consider necessary to keep, but this is one of those cases when quantity very rapidly becomes quality.

In the second variant, only one nuclear superpower will take shape in the world, the U.S., which will dictate to others in accordance with its national interests.

The abandonment of communist ideology, the breakup of the USSR, the complex domestic political struggle, the armed conflicts on the borders and territory of Russia, and the collapse of the economy have vitally changed the correlations between the U.S. and the Russian Federation.

At the same time, one can see an undisguised attempt by the U.S. to destroy the prevailing balance of forces in the world and to attain the position of sole superpower, using its strength at its own discretion at any place on the planet.

The North Atlantic Alliance, which includes three nuclear powers with powerful economic potential, and the countries of Eastern Europe and the Baltics, which evidently will join NATO in the near future, cover the western borders of Russia. Experts estimate that after the withdrawal of our troops from Germany, Poland, the Czech Republic and Slovakia, Hungary and the Baltic countries, and the destruction of tactical nuclear weapons, NATO forces surpass the forces of Russia in this region by a factor of 2 or 3.

In the second variant of conduct of nuclear policy, China will remain the sole nuclear power whom we will be able to deter, along with those non-nuclear powers which may create their own nuclear weapons by the year 2000 and do not enjoy the protection of the U.S. Under these conditions, one can with confidence foresee attempts to realize territorial claims from adjacent countries against a militarily weak Russia.

Thus the second variant of development of the Strategic Nuclear Forces of Russia is politically inadvisable, and for this reason the first variant has quite rightly been adopted here.

The very essence of the long negotiating process to limit and cut strategic offensive weapons (SNV) has always reflected an aspiration if not to parity of nuclear forces, then to a mandatory reduction in the USSR (Russia) of the potential necessary to deter the U.S. This provision was embodied in official documents defining the Russian policy in the area of nuclear weapons. Thus in the "Basic Provisions of Military Doctrine of the Russian Federation," which were approved by the president in November 1993, the goal of this policy was formulated as follows: "elimination of the danger of nuclear war through deterrence of the unleashing of aggression against the Russian Federation and its allies." This also defined the mission of the strategic nuclear forces: "maintenance of the strength and condition of the strategic nuclear forces at a level which assures guaranteed damage to an aggressor under any conditions of the situation."

Everything was planned correctly, so what are the problems?

Unfortunately, many uncertainties remain in the practice of our relations with the U.S. in the field of nuclear arms, and in the implementation of the adopted decisions and programs, leading to dangerous, unilateral concessions, attempts to hurry the already tight deadlines for destruction of weapons, to unilaterally reduce their readiness, to insufficiently finance the programs for their development, to unilaterally reduce the adopted quantity levels of warheads.

### Priority Financing of Development of Single-Warhead ICBMs in the Strategic Missile Forces

Two decades of negotiations on limitation and reduction of strategic offensive weapons has brought us to the signed and fully executed, but still not ratified SALT-2 Treaty, according to which by 2000-20003 the U.S. will have roughly 3500 and Russia (if it adheres to these restrictions) around 3000 nuclear warheads.

Such a correlation of warheads may either ensure or not ensure parity of nuclear forces, depending on their structure.

Some of the causes of possible slippage of the Russian Strategic Missile Forces to a level close to the nuclear potential of France, Great Britain, and China lie in the SALT-2 Treaty itself. It presupposes the breakup and worsening of the structure of Russian strategic nuclear forces: a more than doubling of the percentage share of the less effective naval component and a reduction by roughly half in the percentage share of the more effective and less expensive ground-based ICBMs. In order to fundamentally change the structure of nuclear forces of Russia, in the

Strategic Missile Forces it is necessary to destroy all missiles with multiple reentry vehicles [RGCh] (675-780 launchers, 3775-3880 warhead-carrying reentry vehicles) and in their place manufacture and introduce into the grouping 600-700 new single-warhead ICBMs of the "Topol" type.

This program for rearming the Strategic Missile Forces, which is contained in the SALT-2 Treaty, is today badly financed, calling into question the continuation of the adopted nuclear policy of our country.

This is why the reduction in the Strategic Missile Forces within the framework of the SALT-2 levels is so dangerous.

The three components of the strategic nuclear forces are quite unequal in terms of effectiveness and expenditures for their development and operation.

The contribution of the **air** component to effectiveness of a retaliatory strike of strategic nuclear forces even in the case of the highest readiness (a third of the planes in the air) does not exceed 1-3 percent, although it amounts to around 15 percent of strategic nuclear forces in terms of number of nuclear devices. This is because of the high probability of destruction of the planes remaining at the airfields, and most importantly, the low probability of breakthrough of a small number of bombers and their cruise missiles through the U.S. air defenses.

The **naval** component may amount to 55-60 percent in number of warheads (although this is not mandatory), but the effectiveness of this large number of nuclear forces is also low. The probability of our SSBNs being on patrol at sea even at high readiness levels, which may be maintained for a short time, does not exceed 0.6 to 0.8, while for constant readiness levels it is 0.15 to 0.30. The probability that they will not be destroyed at sea by antisubmarine defense weapons, according to published estimates, is no greater than 0.3 to 0.5. Hence it follows that in a first planned strike of an aggressor, when all SSBNs at bases are reliably destroyed, only 20-40 percent of the forces will be ready for missile launch (0.6 to 0.8 times 0.3 to 0.5). However, the launch order has to be sent from the center to the surviving submarines under water, and the probability of this event at present and in the foreseeable future is quite low. If you multiply 0.2 to 0.4 (the probability of survival of SSBNs in a retaliatory strike) times the probability of delivery of the order, and also allow for the number of warheads on the surviving boats, you can demonstrate that the contribution of the naval component to the effectiveness of a retaliatory strike of strategic nuclear forces is no more than 10 to 20 percent, even though it contains 55 to 60 percent of the warheads.

According to expert calculations, by 2000-2003 there are supposed to be 800-900 launchers with single-warhead ICBMs in the Strategic Missile forces, with an optimal ratio of 60 percent mobile ground launchers and 40 percent fixed silo launchers with standard solid-fuel missiles of the "Topol" type for the two basing modes. With this makeup, under the terms of SALT-2 the average probability of delivery of warheads to the target is 0.4 to 0.45, which is an order of magnitude higher than for an SSBN grouping. This is because of the high survivability of the mobile part of the grouping and the highly effective system of command and control of the Strategic Missile Forces.

Full-blooded Strategic Missile Forces having 800-9000 launchers will perform 75-80 percent of the combat missions in a retaliatory strike of strategic nuclear forces, although their share of warheads will be just 25-30 percent.

Now imagine that because of financial difficulties or out of some other considerations, the decision is made to develop the Strategic Missile Forces not in accordance with the adopted program, but much more slowly. Purely economically, such a "savings" will add additional costs. The missile complex is being built through the cooperation of roughly 300 enterprises of industry. When there is a reduction in the annual volumes of production and extension of the deadlines, the cost of a unit of production will increase sharply, since the enterprises will begin to work nearly in idle (the productive capacities cannot be rolled back, and the orders are scanty).

From the standpoint of effectiveness of the strategic nuclear forces, the picture is even more dismal. Assume that 300 to 450 fewer launchers are introduced into the Strategic Missile Forces than the planned number. To the non-specialist a cut in the strategic nuclear forces from 3000 warheads to 2550-2700 is not significant. However, with allowance for the high effectiveness of precisely this component, the reduction in potential for a retaliatory strike of strategic nuclear forces is 35 to 50 percent.

**The SALT Treaty: Correction and Ratification**

What then can we do with the SALT-2 Treaty if it does not exclude an undesirable structural breakdown of the Russian strategic nuclear forces? The treaty is being executed in its full volume, and in 1993-1994 more than 350 launchers in the Strategic Missile Forces were destroyed. The cut in nuclear weapons is also proceeding in the U.S.

The SALT-2 Treaty must be ratified, but after we have obtained four corrections in it. Three of them are directly associated with the terms of the Treaty. Here is their substance:

1. Define the procedures for monitoring the destruction of warheads removed from heavy bombers, as well as from remaining ICBMs and SLBM platforms of the U.S., in order to prevent their return to the grouping.
2. Extend the period of reduction in the grouping of the Strategic Missile Forces to 2005, which will make it possible to more fully use the operating lives of the ICBMs that are to be destroyed, partially compensating for the insufficient financing of the program of development of strategic nuclear forces.
3. Stipulate the incompatibility of the SALT-1 and SALT-2 Treaties with violation of the ABM Treaty of 1972.
4. Define an attack by non-nuclear weapons and precision weapons against nuclear weapons and the missile warning system, and against elements of command and control of the strategic nuclear forces, as the start of nuclear war.

### A SALT-3 Treaty Is Possible and Advisable

With execution of the SALT-2 Treaty, as was noted above, the strategic nuclear forces of the U.S. will include around 3500 warheads, and those of Russia a maximum of 3000 when the program of deployment of single-warhead ICBMs is carried out in the Strategic Missile Forces.

The plans for development of the nuclear forces of France and Great Britain presuppose that by 2000-2005, these countries together will have 1200 warheads. The nuclear forces of China will also grow and be improved.

The nuclear forces of France and Great Britain together with the U.S. may oppose the strategic nuclear forces of Russia. Estimates show present actions of these three countries reduce the effectiveness of the potential of nuclear deterrence of Russia by 25-30 percent when the terms of the SALT-2 Treaty are met.

But even under these conditions, if the SALT-2 Treat is adopted with the suggested corrections, it is possible to agree to a further cut in the nuclear forces of Russia and the U.S. without involvement of the other nuclear powers. The essence of this further reduction, which would define the basis of the SALT-3 Treaty, boils down to each side's destruction of a component of the strategic nuclear forces that is a less effective deterrent.

Russia would destroy its air component (around 430 devices) and the U.S. the ground component (500). There would then remain 2500-2600 warheads in the Russian strategic nuclear forces, and around 3000 in the U.S. strategic nuclear forces. The effectiveness of a retaliatory strike by the U.S. would be reduced by this by about 3 to 4 percent, and the deterrent potential of Russia accordingly by 1 to 3 percent.

### Unilateral Nuclear Disarmament of Russia Is Dangerous to the U.S. and to Peace

Besides the danger of untimely and incomplete financing of the rearmament of the Strategic Missile Forces in accordance with the terms of the SALT-2 Treaty, one might say that there also exists an internal danger, the taking of a decision for a unilateral, significant reduction in strategic nuclear forces to 1500-2000 warheads, at the expense of the ground and naval component. The logic of such proposals is simple: there are no resources, and do we really need so many nuclear weapons?

The answer to the second part of the question (how many is necessary) was given above. One may advise those who want to change the nuclear policy of the state to discuss this question publicly, for example in the Federal Assembly, acknowledging that the military doctrine adopted in November 1993 and its corresponding program of development of the strategic nuclear forces were erroneous, and that the signing of the SALT-2 Treaty in January 1993 testifies to the political unsoundness of the country's leadership, since under unilateral disarmament the Treaty is not necessary and even economically harmful.

I would like to look more closely at one aspect of the consequences of abandonment of the adopted nuclear policy of Russia. With loss of potential to deter the U.S., in the event of worsening of relations between the two countries (which is quite possible after the arrival of the Republicans in power), the future leadership of Russia may be tempted to return to a policy of deterrence of the U.S., but now only through first-strike potential, since decades are required to build up deterrent potential.

In other words, he who promotes Russia's loss of deterrent potential may prompt the future leadership of the country to conduct an aggressive nuclear policy provoked by its own weakness.

Thus to implement the country's nuclear policy, defined by the president and the government in the "Basic Provisions of Military Doctrine of the Russian Federation," requires priority financing of development of a single-warhead grouping of ICBMs in the Strategic Missile Forces, in keeping with the terms of the SALT-2 Treaty (800-900 launchers). The failure of this program, and especially a unilateral reduction in the strategic nuclear force grouping at the expense of the ground and naval component, are tantamount to a fundamental change in the adopted policy, and would make the SALT-2 Treaty useless and economically irrational.

Further bilateral cuts in the strategic offensive weapons of the U.S. and Russia (SALT-3 Treaty) are possible through elimination, from the nuclear forces, of components which are of low effectiveness as deterrent potential: Russia can destroy its air component, and the U.S. its ground component, reducing deterrent potentials by just 1 to 4 percent.

However for us such nuclear potential would be sufficient to accomplish the assigned political goals, deterrence of the U.S. and its allies from aggression.

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## Defense Ministry Wants To Cancel Delays in Army Service

*LD2002192295 Moscow INTERFAX in English 1701 GMT 20 Feb 95*

[FBIS Transcribed Text] MOSCOW, Feb 20 (Interfax)—The Russian Defense Ministry proposed in its letter to the State Duma that several delays for service in the army be cancelled and the army service be 2 years.

The Defense Ministry said that only 20 people of every 100 men due for call-up were currently drafted as legislation provides for 21 kinds of delays, Interfax learned.

The Defense Ministry said that from 50 percent to 58 percent of men due for call-up were annually drafted in the NATO countries despite the possibility of alternative service.

The Defense Ministry said it would manage to draft not more than 100,000 people this year if all the delays

remained. The Defense Ministry said thus the army would have only 60 percent of its due number which "would be a catastrophe."

The Defense Ministry proposed that the delays for students of vocational schools (which could give 80,000 more people), men having children under three years (11,000) and those having elderly parents older than 50 years (10,000) be cancelled. Military experts said this would raise the completion of the army with people to 78-80 percent.

The Defense Ministry said that beginning from this spring the service in the army should be 2 years for those drafted now as well as for those drafted earlier.

The Defense Ministry said the army could be completed with people for 100 percent if "such non-popular measures" as drafting students of higher educational establishments or raising the term for service in the army to three years, as now on the fleet, were taken.

### Lack of Money Frustrates Armor Improvement Plans

*95UM0285B Moscow KRASNAYA ZVEZDA in Russian 21 Feb 95 p 1*

[Article by KRASNAYA ZVEZDA Correspondent Vladimir Maryukha, under the rubric: "KRASNAYA ZVEZDA and Telegraph Agency Correspondents Report": "The Budget Does Not Permit the Army To Strengthen Armor"]

[FBIS Translated Text] The military-technical practical conference "Puti sovershenstvovaniya bronetankovoy tekhniki" [Ways To Improve Armored Vehicles] took place in the Moscow suburb of Kubinka. Its conduct was caused by the need to summarize the experience of Russian troop operations in Chechnya where losses of tanks and BMPs [armored personnel vehicles] were quite perceptible under conditions of urban battles.

The technical issues of increasing the survivability of armored vehicles that were discussed, specifically, future developments of active armor of tanks and other combat vehicles, could once again remain on paper due to the defense industry's chronic money shortage.

Russian Minister of Defense General of the Army Pavel Grachev participated in the conference.

### Women's Faction Calls for Grachev Removal

*95UM0291A Moscow MOSCOW NEWS in English No 5, 3-9 Feb 95 pp 1, 4*

[Article by Yekaterina Lakhova, State Duma deputy, leader of the Women of Russia faction: "Protect the Army from the Defense Minister"; first paragraph is introductory paragraph]

[FBIS Transcribed Text] Last Friday the Duma did not vote for the resignation of Defense Minister Pavel Grachev, on which the Women of Russia faction insisted. The deputies agreed that "horses cannot be changed on the crossing." By crossing they meant the protracted military operation in Chechnya.

The paradox is that the miscalculations of the organizer of the Chechen campaign now serve him as a safeguard. And criticism addressed to the defense minister is becoming the main and only cause of his failures as a military leader.

Meanwhile, the events in Chechnya have only revealed the intensity of the crisis experienced by Russian society. And, perhaps, the most alarming feature of this crisis are the attempts of various political forces to involve the Army into internal conflicts. The Army can respond differently to them. It may be recalled that at one of the army meetings a dashing officer expressed his readiness to send paratroopers to the Duma if it refuses to finance fully the needs of the Army. The camera which showed at that moment the presidium, registered an expression of approval on the face of the defense minister.

It is easy to say that the critics of Minister Grachev are not unbiased and represent, according to the Liberal Democratic Party of Russia leader, some "fifth column" acting in the rear of the Army and the state. However, preparing the question for the plenary session of the Duma we were guided not by subjective assessments, but by the conclusions of military experts. According to the latter, the situation in the Army is critical. Isn't the defense minister responsible for this?

If the main constitutional task of the Armed Forces is to defend the country from outside aggression, the country has the right to hope that its Army and Navy will be stronger in all respects than the "potential opponent." Can we be quiet in this respect? During Grachev's tenure in office the programs of military research were cut down many times. Over the past three years the supply of the Army and Navy with the latest types of armaments and military hardware has practically stopped, and the weapons available in the troops are mostly extremely worn-out. The army's fighting efficiency is shrinking disastrously and in the near future we are threatened with lagging far behind the countries advanced in military and technical respects.

Amateurish experiments to speed up the transfer to a contract service discredit the very idea of a professional army. Such reforms call not only for appropriate material and social conditions but also for the existence of a legal basis for the selection and training of people hired by contract. Today Russia's Defense Ministry has nothing like this. As a result, the military units and formations are manned by not more than 50 percent of their prescribed staff.

Besides, combat training of the Army and Navy has practically stopped over the past three years. Operations-tactical and tactical exercises have been fully stopped and the programs of field, flying and naval training of troops have been cut down. Exercises on terrain have been replaced everywhere by marking these actions on charts. The military operation in Chechnya has shown with what casualties one pays for combat training, when these skills are acquired directly on the battlefield.

On the whole, the entire "military reform" carried out under the immediate guidance of the defense minister is

destructive. Senior and middle-rank officers leave the service as a result of rash staff reduction. At the same time, the number of posts filled by generals is growing and under Grachev exceeds even the number established for the Armed Forces of the former USSR. Events in Chechnya revealed the disorder and vacillation among high-ranking commanders, which is the direct consequence of the cadre policy pursued by the defense minister, who values personal devotion and not professionalism.

The miscalculations of the military leaders are usually justified by references to the reduction of expenses on defense. It is time to stop taking these arguments seriously. Yes, defense expenses are reduced but the Army, just as the state, must learn to live within their means, and be able to prove convincingly the validity of their expenses. Meanwhile, the deputies are compelled to be content with a secret military budget which consists of only five items. But in the American budget there are, I think, more than 700. Isn't it because the shortage of petrol for exercises in the country does not affect the construction of dachas belonging to generals?

### More Complaints on Nonpayment by Finance Ministry

*95UM0285A Moscow KRASNAYA ZVEZDA in Russian 21 Feb 95 p 1*

[Article by KRASNAYA ZVEZDA Correspondent Ivan Ivanyuk: "The Beginning of the Year—The Army Has No Money. How Much Can Long-Suffering Servicemen Undergo?"]

[FBIS Translated Text] They say that silence is golden. Recalling that, you once again become convinced that our Ministry of Finance has, despite the conjecture, an inexhaustible gold reserve. Well and the Ministry of Finance knows how to be silent—KRASNAYA ZVEZDA also did not manage to obtain any reaction whatsoever from the leaders of that department on the numerous articles with regard to the unsatisfactory financing of the Armed Forces.

The latest attempt to directly obtain an interview with someone also came to naught. For approximately one week, we conducted negotiations with the secretary of First Deputy Minister of Finance Vladimir Petrov and with the head of the Ministry Press Service Lyudmila Chepaykina and her subordinate Irina Yershova. But neither Mr. Petrov nor Mr. Astakhov, another deputy minister who is directly responsible for financing defense expenditures, could find the time for a meeting with a correspondent of the central military newspaper. They also have no desire to constructively discuss the financial problems of the Army and Navy because they simply do not have anything to say to the people in uniform.

Meanwhile, more and more questions, the urgency of which overshadow all other problems of late, are arising among Armed Forces servicemen, workers and employees, especially since the beginning of that week in which the issuance of February salaries and wages was scheduled to begin in the troops. But many servicemen have also not yet received money for January. No one knows when they will be paid and finance workers are throwing up their hands: there isn't any cash. And what about last year's state debt to the Army which totaled nearly 12 trillion rubles? How will the operations of military subunits in Chechnya be financed?

So, having failed to get a response from the Ministry of Finance to these and other questions that are stirring up military collectives right now, we were compelled, as usual, to request that the RF Ministry of Defense Armed Forces Main Military Budget and Finance Directorate comment on the situation. This is what Lieutenant-General Vasiliy Kuznetsov, Main Directorate first deputy chief, reported to us:

"If you call a spade a spade, we have found ourselves in a distinctive financial dead end. Despite repeated appeals to the government, we have not managed to find out when the funds that we have not yet received that were prescribed by law in the country's 1994 budget will be allocated to the Ministry of Defense. Without them, it is impossible to settle accounts with the numerous suppliers of goods and services. The situation is being exacerbated by the fact that this year financing the needs of the Army and Navy is being conducted even worse than last year. Right now, until the 1995 budget is finally approved, the law "On Financing State Expenditures From the Federal Budget in the First Quarter of 1995" is in force. It directly states: while financing expenditures from the federal budget, the government proceeds from projections for the first quarter. If you take that as a basis, the Armed Forces should receive R3.5 trillion on a monthly basis—a sum that is clearly inadequate to satisfy even the most minimal needs of the troops. But they are also actually not allocating these resources. So, in January, the Ministry of Defense received R2,069 billion rubles which is only 59 percent of the amount that is prescribed by law. In February, a limit of R2.7 trillion has been set and at that they plan to allocate only R1.5 trillion in monetary resources and the rest—in treasury obligations. This money is not even enough to pay salaries and wages. The situation is being dramatically exacerbated by the fact that the December 9, 1994 RF Government Decree No. 1360 on the allocation of monetary resources to maintain the group of forces in the Chechen Republic is not being carried out. Of the approved amount, only 37 percent of the resources have actually been deposited into the Ministry of Defense account. The Ministry of Defense has recently been compelled to maintain the troops in Chechnya using resources that were designated to pay salaries and wages. As a result, indebtedness for these items of expenditure exceeded R500 billion as of February 1. We need R1,634 billion in February just to cover that debt. There is no money to pay for food, equipment, fuel and other vitally important needs. There are also no resources for the group that is conducting combat operations in Chechnya. We must not forget that even what would appear to be secondary needs become primary needs there and each day's delay in supplying them is fraught with the most severe consequences..."

As Lieutenant-General Kuznetsov said, expenditures in Chechnya have increased primarily due to the allocation of additional material resources to support combat operations and also for allowances that have bee introduced for

servicemen—per diem at triple the rate, increased rations, etc. Maybe right now the thought has struck someone in the Ministry of Finance: since the Army has for the most part managed to perform its combat mission, in general maybe there's no reason to allocate this money to it? Of course, that simply couldn't come to mind. All the more so that the return of military units to their permanent deployment locations will once again require significant expenditures. These expenditures have also not been planned for in the military budget.

Frankly speaking, the parliamentarians' approaches to the military budget puts us on guard. Recently, a "Yabloko" faction proposal—amend the Law on the 1995 Federal Budget and remove R1 trillion from current maintenance of the Army and Navy, having increased the expenditure item to acquire military equipment and arms—was adopted at an expanded session of the State Duma Committee on Budget, Taxes, Banks and Finance with the involvement of other Duma committees. This money will primarily go toward paying off debts for last year's defense order. Of course, the debts need to be paid but do we really need to do that once again at the expense of soldiers and officers? We're maintaining the Army with nothing and under that approach we will soon have nothing with which to buy soap for soldiers and they will not only not get meat for dinner, they will see the cheapest fish only on holidays.

It seems that both the government and the parliament as before continue to test the patience of people in uniform. But, alas, that patience isn't unlimited...

## DOCTRINAL ISSUES

### General Summary of RF Military Doctrine

*95UM0264A Moscow NOVAYA ROSSIYA: INFORMATSIONNO-STATISTICHESKIY ALMANAKH in Russian 1994 pp 73-77*

[Article by A.V. Vakhrameyev: "On the Military Doctrine of the Russian Federation"]

[FBIS Translated Text] After the Order of the RF President of May 7, 1992 on the Creation of the Armed Forces of Russia, questions have arisen regarding their role and place in present-day society, the goals and tasks of the armed forces, the methods and means of accomplishing these tasks, and ways of emerging from the grave crisis currently experienced by the armed forces of Russia in connection with the breakup of the USSR and the end of existence of the Soviet Army.

The military doctrine of the Russian federation gives the answers to these questions. It is a system of views officially adopted within the state regarding: prevention of wars and military conflicts; military development; preparation of the country for defense; organization of opposition to threats to military security of the state; and the use of the armed forces and other troops to protect the vitally important interests of Russia.

The development of the military doctrine of the Russian Federation began back before the creation of the Russian armed forces. Its basic provisions were widely discussed by specialists, by the public, and by the leadership of the Russian Federation. They were considered at sessions of the Security Council of the Russian Federation on March 3 and October 6, 1993. At the session on November 2, 1993, the RF Security Council approved the document that had been developed. By order of the RF President of November 2, 1993 No 1883 "The Basic Provisions of Military Doctrine" were adopted, and on November 18 the text of this document, with the exception of five lines containing confidential military information, were published in the newspapers IZVESTIYA and ROSSIYSKIYE VESTI.

The document formulates the political, military, military-technical and economic foundations of the RF military doctrine. For the first time in history, the content of the military doctrine of Russia became public knowledge.

In the section of the document on the political foundations of the RF military doctrine, it gives a general description of the situation in the world after the end of the "cold war," notes that in a situation in which confrontation is being overcome, partnership expanded, trust in the military area strengthened, and nuclear and conventional weapons reduced the threat of global military conflict has diminished. However the task of preventing wars and military conflicts has by no means been taken from the agenda. What is more, in a number of world regions, including on the territory of the former Soviet Union, the issue is not prevention but cessation of wars and military conflicts already under way. The causes for their outbreak are associated with the aspiration of a number of states and political forces to resolve the social, political, economic, territorial, religious, ethnic and other contradictions between through the use of force and weapons. Under these conditions, Russia favors peaceful settlement of international controversies, respect for sovereignty and territory integrity of the states, non-interference in their internal affairs, inviolability of state borders, and compliance with the other generally recognized principles of international law.

The Russian Federation is assisting the efforts of the world community to prevent wars and armed conflicts, and to maintain or restore the peace, and is participating in the development, adoption and implementation of a group of effective measures by all countries to achieve these goals. The Russian Federation does not relate to any state as its adversary, does not use its armed forces or other troops except for individual or collective self-defense, should an armed attack be delivered against the Russian Federation, its citizens, territory, armed forces, other troops or its allies. In the event of such an attack, the RF will rebuff it by all means at its disposal, including by use of nuclear weapons.

The document raises in a new way the question of RF policy in the area of nuclear weapons. Their existence in the Russian Armed Forces is a means to eliminate the danger of nuclear war through deterrence of the unleashing of aggression against the RF and its allies. The RF will not use nuclear weapons against any state which does not have nuclear weapons and is a party to the Nuclear Non-Proliferation Treaty. However, if an attack is launched against the RF by a country which is allied with a state

which does have nuclear weapons, or if this attack is carried out jointly with such a state, the RF retains the right to use nuclear weapons, and to deliver a preemptive nuclear strike against the adversary. This means that Russia rejects the obligation undertaken by the Soviet Union in 1982 of no first use of nuclear weapons. The RF nuclear strategy, consequently, is closer to the nuclear strategy of NATO, in which there is no such obligation. The change in the RF nuclear strategy is explained first of all by the fact that the obligation of the USSR of no first use of nuclear weapons was viewed in the West as declarative and propagandistic. On the other hand, "nuclear deterrence" on the part of NATO and the threat of first use of nuclear weapons in the event of military conflict was explained by the fact that the countries of the Warsaw Pact had superiority over the NATO countries in conventional forces and arms in a ratio of 2.7:1, while the USSR had a two-fold superiority over all 16 member states of NATO. "Nuclear deterrence" was supposed to neutralize this superiority. But after the end of existence of the Warsaw Pact, the breakup of the USSR and elimination of the Soviet Army, and the signing of the Treaty to Reduce Conventional Armed Forces and Arms in Europe, the correlation of forces of Russia and NATO was 1:2.8, and with allowance for the former members of the Warsaw Pact, 1:4.5. In 1988, the USSR had ground troops with a numerical strength of 1.6 million men and 60 thousand tanks. By the mid-1990s, the entire Russian Army will number 1.5 million men, and the ground forces 600-700 thousand. By the terms of the Treaty on Reduction of Conventional Armed Forces in Europe, 10-15 thousand tanks will remain in the European zone of Russia and roughly the same number for protection of its southern and eastern borders. Thus Russia has no superiority over NATO in conventional armed forces or arms any longer. As a result of the general crisis encompassing the post-Soviet space and all spheres of its public life, including military, the combat potential of the former Soviet Army has diminished sharply, military technology is backward in a number of indices in comparison with the West, and Russia cannot immediately develop new types of up-to-date precision conventional weapons, for it does not have the time or the resources. Consequently, under the conditions that have been created, nuclear weapons remain nearly the sole deterrent means against a potential aggressor.

The document specifically enumerates the existing and potential sources of military danger to Russia. The external sources of such a threat include:

—territorial claims of other states against the RF and its allies;

—existing and potential focuses of local wars and armed conflicts, particularly in direct proximity to Russian borders;

—the possibility of the use of nuclear and other types of mass-destruction weapons (including unsanctioned use);

—the proliferation of nuclear and other types of mass-destruction weapons, the means of their delivery, and the latest technologies of military production;

—the possibility of the undermining of strategic stability as a result of violation of international understandings in the area of arms reduction and limitation, and qualitative and quantitative arms buildups by other countries;

—attempts at interference in internal affairs, and destabilization of the domestic political situation in the RF;

—suppression of the rights, freedoms and legal interests of citizens of the RF in foreign states;

—attack on military installations of the RF on the territory of foreign countries;

—expansion of military blocs and alliances to the detriment of the interests of the military security of the RF;

—international terrorism.

Under certain circumstances, the military danger may grow into a direct military threat to the RF. This will occur in the event of a buildup of troop groupings at its borders to limits that disrupt the prevailing correlation of forces; attack on installations and structures on the state border of the RF and its allies, and the unleashing of border conflicts and armed provocations; preparation of armed formations on the territory of other states, intended for transport to the territory of the RF and its allies; actions by other countries hampering the operation of Russian systems of support of strategic nuclear forces and state and military control, particularly their space component; insertion of foreign troops onto the territory of states contiguous with the RF, if this is not associated with measures to restore and maintain the peace, with the consent of the RF.

Besides the foreign sources of military threats, there are also internal ones, which may be opposed by the use of military forces and other troops of the RF. Such sources include:

—illegal activity of nationalist, separatist and other organizations aimed at destabilization of the internal situation in the RF and violation of its territory integrity, and implemented with the use of armed force;

—attempts at violent overthrow of constitutional order, and disorganization of functioning of the organs of state authority and control;

—attack on installations of nuclear power engineering, or chemical or biological production, and other potentially hazardous installations;

—creation of illegal armed formations;

—growth of organized crime and smuggling activity on a scale which threatens the safety of civilians and society;

—attacks on arsenals, weapons warehouses, enterprises which produce arms, military and special equipment, and on organizations and institutions and structures which have organic weapons, in order to capture them;

—illegal spread on the RF territory of weapons, munitions, explosives and other weapons of implementation of sabotage and terrorist acts, and also illicit trafficking in narcotics.

A threat to the military security of Russia also stems from the uncertain treaty status of a number of sections of the state border, and the incomplete settlement of the legal status of armed forces and other troops of the RF beyond its borders.

The document defines the main areas of safeguarding of military security and the basic principles of RF policy in the field of military security. It formulates the tasks of the state in this sphere of its activity. In peacetime these tasks consist in maintenance of the military potential of the country at a level adequate to the existing and potential military threats, in qualitative improvement of the armed forces, in priority allocation of appropriations to the defense scientific and technological developments most promising for safeguarding the security and development of the country's economy, in rational conversion of military production, in readiness of the organs of state control and economics of the country for mobilization of forces and resources to prevent wars and military conflicts and ensure reliable protection of the state border, in stopping provocations and encroachments on the safety of citizens and on the sovereignty, territorial integrity and other vitally important interests of the RF.

In the threat period and with the start of war (armed conflict), the tasks of safeguarding the security of the RF will consist in timely declaration of a state of war, declaration of a state of emergency in the country or in individual areas, placement of armed forces and other troops in combat readiness, mobilization of the necessary forces and resources to repel the aggressor, coordination of the efforts of all the organs of authority and control, public organizations and the populace to repel aggression and to meet the international obligations of the RF to provide military assistance to allied countries and participate in peace-keeping operations.

The president of the RF organizes, monitors and coordinates all activity to accomplish the tasks of safeguarding the security of Russia. He heads the Security Council, the organ which prepares the decisions of the president in the area of safeguarding the security of the citizens, society and the state.

The military foundations of the document consider questions associated with the use of armed forces and other troops of the RF, missions of the armed forces and other troops of the RF, organization of command and control of them, and the basic goals, principles and tasks of military development.

The document stresses that the main purpose for using the armed forces and other troops of the RF in armed conflicts and local wars is to localize the focuses of tension and stop military actions at the earliest possible stage, so as to create the preconditions for elimination of the conflict on terms that meet the interests of the RF. Armed conflicts and local wars may grow into a large-scale war involving mass-destruction weapons, which may provoke disastrous consequences for the entire planet. For this reason, the task of the RF political and military leadership and of all the world community consists in preventing such a spread and internationalization of local wars and armed conflicts.

Internal conflicts which threaten the vitally important interests of the RF also pose a serious danger. They can be used as a pretext for interference of other states in its internal affairs. In order to prevent this, it is necessary to call on the Russian troops to normalize the situation, restore legality and order, ensure public safety, provide the necessary assistance to the populace and create conditions for settlement of the conflicts by political means.

To prevent wars and armed conflicts and ensure deterrence of potential aggressors, the following missions are assigned to the RF armed forces:

—together with other competent organs (SVR, FSK [Federal Counterintelligence Service], MID [Ministry of Foreign Affairs], MVD [Ministry of Internal Affairs]), timely discovery of an armed attack in preparation, or the threatening development of a situation, and notification of the highest leadership of the country about them;

—maintenance of the strength and status of strategic nuclear forces at a level ensuring guaranteed irreparable damage to an aggressor;

—maintenance of the combat potential of groupings of general-purpose troops in peacetime at a level which ensures repulse of aggression on a local (regional) scale;

—support of strategic deployment of armed forces and other troops;

—protection of the state border by border troops, and of important state borders by internal troops, which are also assigned the task of halting especially dangerous violations of law, sabotage and terrorist acts.

In the event of aggression against the RF and its allies, the missions of the Russian armed forces will consist in repulse of enemy strikes, engagement of the adversary, creation of conditions for cessation of military actions at the earliest possible stage and conclusion of a peace that meets the interests of the RF. It is not a question of military defeat and unconditional capitulation of the adversary or occupation of his territory, of "victory" in the traditional sense of the word, but of inflicting damage on the aggressor which would deprive him of the capability of continuing his actions or renewing them. For the first time the document formulates the missions of contingents of armed forces of the RF participating in peacekeeping operations conducted by decision of the U.N. Security Council or in accordance with the international obligations of Russia. These missions consist in reconnaissance of armed groupings of conflicting sides, support of delivery of humanitarian aid to the civilian populace and its evacuation from the conflict zone, and blockading of the conflict area in order to support the execution of sanctions adopted by the international community. The accomplishment of these tasks must be directed toward creation of the conditions of political settlement of the conflict.

In order to prevent and halt internal conflicts and other actions involving the use of the means of armed force in the RF that threaten the territorial integrity and other interests of society and Russian citizens, the document

assigns the following missions to the organs of internal affairs and the internal troops of the MVD:

—assurance of protection of public order and maintenance of a legal mode of the state of emergency in the conflict area;

—halting of armed clashes and separation of the opposing sides;

—disarmament and elimination of illegal armed formations, and removal of weapons from the population in the conflict zone;

—strengthening of protection of public order and safety in areas contiguous with the zone of the conflict;

—conduct of operational-search and investigative measures in the interests of eliminating the threat to the internal security in the conflict region.

To assist the MVD organs and internal troops in the accomplishment of these tasks, individual formations of armed forces and other troops of the RF may be called on. This is a fundamentally new provision. It provides the juridical basis for the use of armed forces which had already occurred, for resolution of internal conflicts on the territory of Russia (the Osetia-Ingushetia conflict, and the events of October, 1993 in Moscow).

At first glance, the possibility of recruitment of the army to resolve internal conflicts contradicts the thesis formulated in that same document regarding the prevention of interference of armed forces in politics and their use in the interests of individual groups, persons, parties, and public associations. But in this case the interests are those of the state, society, and citizens, which must be protected by all forces and means, including by the actions of the regular army, when the need arises. Russia is not the only country in the world which does this. In states such as the U.S., England, France, and Germany, the fundamental state documents affirm the possibility of the use of armed forces for safeguarding internal security.

The document also provides for the assistance of the Russian armed forces to the border troops in protecting the state border of the RF and the CIS, and also to the civilian populace in eliminating the consequences of accidents, disasters and natural calamities.

The document proclaims the main goal of the document to be the creation and development of troops (forces) capable of protecting the independence, sovereignty, and territorial integrity of the country, the safety of its citizens and other vitally important interests of society and state.

The basic principles of military development of the RF are:

—control of the organs of military command and control and of officials by the highest organs of state authority, the president as the supreme commander-in-chief of the Armed Forces, and the RF government.

—observance of general civil and political rights and freedoms and social protection of service members in accordance with the specifics of their military service;

—centralization of military leadership and one-man-command on a legal basis;

—maintenance of a high level of professionalism of the armed forces and other troops of the RF;

—assurance of the capability of buildup of combat might of the armed forces and other RF troops adequately to the growth of the military threat;

—timely accumulation and preparation of a mobilization reserve;

— allowance for the geopolitical and geostrategic situation of the country;

—use of national and world experience of military development.

The formulation of the above principles for development of the armed forces and other troops of the RF is important in at least two aspects. First of all, contrary to the opinion which was widespread in national and foreign mass media, that after events of October 1993, the military had begun to play an independent role in Russian politics, the document confirms the principle of political subordination of the military to civilian organs of executive authority. However this does not mean that the armed forces have no interests of their own, which they persistently defend. Thus the leadership of the RF Defense Ministry believes that the funds allocated for military needs in the budget for 1994 are clearly inadequate.

The document also formulates the specific tasks of military development, Before 1996, they consist in the creation of groupings of troops on the territory of the RF, improvement in the service structure of the troops, conclusion of the withdrawal of formations and units, located beyond the borders of Russia, to its territory, continuation of the transition to a mixed system of manpower acquisition of the armed forces, and reduction in the numerical strength of the armed forces to the established level. Some results have already been achieved in accomplishment of these tasks. On December 1, 1993, the Russian armed forces numbered 2,341 thousand men. After May 7, 1992 (the formation of the Russian Army), 457 thousand men were discharged to the reserve and to retirement. Three headquarters of military districts were disbanded (Turkestan, Volga-Ural, and Transcaucasus), 8 headquarters of armies, including 4 air armies, one army corps (in the Transcaucasus), 19 headquarters of divisions, and 8 military schools. Directorates for Personnel Work of the Defense Ministry, where until recently there were 40 general slots, have been reorganized. In the Moscow and Northern Caucasus military districts, groupings of troops are being formed on the basis of units and formations withdrawn from Central Europe, the Baltics, the Transcaucasus and Central Asia. In 1993, 640 thousand men, 30 thousand tanks and IFVs, 9 thousand artillery systems, and 4.4 thousand planes and helicopters were withdrawn from foreign countries. Forty-six divisions were disbanded. Russian troops left the Czech Republic and Slovakia, Hungary, Poland, Mongolia, Latvia, and Cuba, and in the near future they will also leave Germany, Latvia, and Estonia.

The tasks of military development for 1996-2000 consist in concluding the reorganization of the structure of the armed forces and the transition to a mixed system of manpower acquisition, combining service on a voluntary basis, by contract, with service based on conscription, and the creation of groupings of troops (forces) and a military infrastructure on the territory of the RF. Here the development of armed forces and other troops intended for deterrence of aggression, as well as of mobile armed forces capable of quick transport, deployment and conduct of military actions in any axis (in any region) where a threat to the security of the RF may arise, is considered a priority. Work has begun to create such forces in the Airborne Troops and Ground Troops. These include immediate-reaction forces capable of entering battle within 4-10 hours, and quick reaction forces created in the Moscow, Leningrad, Volga, Ural, and Northern Caucasus military districts.

Fundamentally new in the document is the thesis that the interests of security of the RF and other member states of the CIS may demand the deployment of troops (forces) and resources beyond the borders of RF territory, and also the creation of mixed troop formations manned with service members of CIS states, as a rule on a contract basis. The troops (forces) of the RF may be beyond the borders of its territory as part of joint groupings, with the troops of other states, or as part of Russian groupings and individual bases (installations). Regardless of the conditions of deployment, Russian military formations will be part of the armed forces of the RF and when carrying out the missions assigned to them, will operate in accordance with procedures established in the armed forces of the RF, with allowance for bilateral treaties and agreements.

At first glance, the proclamation in the RF military doctrine of the need for the presence of Russian troops and bases on the territories of other states appears illogical when juxtaposed with the withdrawal of armed forces of the RF from foreign territories. But there is no contradiction here. Russian troops are being withdrawn from those states whose leadership and populace (with the exception of Cuba) do not want them on their territories, and conversely, are remaining in the states whose leadership has asked for them (Georgia, Tajikistan), for without the presence of Russian troops and their stabilizing role, the present regimes in these countries would scarcely be able to stay in power or achieve a cessation of the civil wars being fought there. The armed forces and military bases (installations) of the RF will be in these countries until the situation normalizes there, as long as the leadership and public of these states show interest in the presence of Russian military units and military installations, as long as such a presence is dictated by the interests of national security of the RF and other countries of the CIS.

The document also considers the goals and tasks of military-technical support of security of the RF, the basic trends of development of its defense-industry potential, and military-technical cooperation of Russia with foreign countries.

The main goal of military-technical support of Russia's security is timely supply of the armed forces and other troops of the RF with effective weapons systems, military special equipment and gear in the amounts necessary and sufficient for guaranteed protection of the vitally important interests of society and the state. Toward this end, it is necessary to create an optimal weapons system ensuring increased combat effectiveness through qualitative indices, to supply the armed forces and other troops of the RF with effective models of weapons, military and special equipment and gear, to use the latest scientific-technical achievements, progressive technologies and materials, to conduct research and development for advanced design of new generations of military equipment, and to assure the necessary production and mobilization capacities of industry to produce arms, military and special equipment and gear.

The Russian defense industry must now work under difficult conditions, in which military orders have been cut by a factor of 3, and 80 percent of the 200 thousand enterprises of the military-industrial complex are working for civilian needs. In the past, the correlation of expenditures for the purchase of weapons and functioning of the army was 2:1, while now 23 percent of expenditures go for the purchase of weapons, and the rest for the functioning of the army. Under these conditions, the military-industrial complex of the RF can no longer allow itself to produce outmoded types of weapons and military equipment, especially in the former volumes. The resources allocated for the development of military production and the military-industrial complex must be used prudently and economically, producing new products that are truly needed for the RF armed forces.

As the document stresses, the development and implementation of long-term weapons and military equipment programs (up to 10-15 years) and state orders, as well as the structural revamping of industry, assuring military-technical and economic independence of the RF under conditions of the transition to a market economy, must become the main trends of military-technical support of security and the rational use of defense-industry potential. The priorities of military-technical support of RF security must be:

—advanced development of fundamental and applied research and experimental design work, making it possible to react effectively to military threats and military-technical breakthroughs that occur;

—development and production of effective systems of command and control of troops and weapons, communications, strategic reconnaissance, electronic warfare, precision mobile non-nuclear weapons, as well as systems of information support;

—maintenance of a whole group of strategic weapons at a level that safeguards the security of the RF and its allies, strategic stability, deterrence of nuclear and conventional wars, and nuclear security;

—enhancement of the individual technical supply level of service members with the means of armed conflict, communications and protection.

As for military-technical cooperation with foreign countries, the document stresses that here the RF proceeds from the need for balanced safeguarding of its military-political and economic interests, in contrast to the practice of the former Soviet Union, when military-technical cooperation was mostly ideological in nature, was directed toward the support of regimes pleasing to the Soviet leadership, and as a rule did not bring the corresponding economic return.

Suffice to say that in the 80s the Soviet Union sent weapons worth 121 billion dollars to 55 countries, but no more than one tenth of that sum went to the treasury, for the greater part of the deliveries were in the form of long-term or preferential credits, payments which have not been collected to this day. Such a practice was halted by the present Russian leadership, but the reduction in sales of weapons to foreign countries from 6 billion dollars in 1991 to 1.3 billion dollars in 1992 was a negative side effect. Such a situation can hardly be acceptable for the RF. That is why the document considers the expansion of foreign sales of arms and military equipment, military technologies and the results of scientific-technical activity in the military field, which are an important source of currency revenues. There are also provisions for the dispatching of military advisors and specialists, the conduct of order-based and joint research and development to create new models of arms and military equipment, and provision of technical assistance in the development of military installations and enterprises of the defense industry.

The RF attaches priority importance to the restoration and expansion, on a mutually advantageous basis, of cooperative ties of enterprises of the military industrial complex and branches of scientific research institutions of the CIS member states.

Publication of the document on the basic provisions of RF military doctrine provoked a wide response from Russian and the world public, the mass media, political figures of foreign countries, and military specialists. Reaction to the "Basic Provisions of RF Military Doctrine," especially those of them which differed fundamentally from the former military doctrine, was mixed. Politicians and mass media of the West as a whole approved the fact of the document's appearance and publication of its basic provisions in the open press. They noted with satisfaction the business-like, realistic, and pragmatic nature of the document, especially pointing to the fact that Russia no longer related to the countries of the West as a potential adversary. U.S. Secretary of State W. Christopher stated on November 4, 1994, that the development of the RF military doctrine was an attempt to catch up with the new realities in Russia, which had appeared in recent years, when an enormous reduction in the Soviet military machine occurred, affecting all arms, including nuclear. The U.S., Christopher continued, had never seriously accepted the USSR's obligation of no first use of nuclear weapons, and abandonment of this made the Russian military doctrine more like the American. The U.S. welcomed the readiness of Russia to withdraw its troops from the territories of other states. But there were no grounds for the fears that imperial ambitions lie behind the participation of Russian troops in the settlement of conflicts. Such operations will be conducted only on the basis of cooperation with other states involved in the conflict. Operations beyond the borders of Russia must correspond to international norms, the U.N. Charter and the CSCE Final Act.

The WASHINGTON POST noted that the compilers of the doctrine were turning away from military confrontation with the U.S. and were logically concentrating attention on regional, local and territorial threats. Writes the WASHINGTON POST, "The document proclaims the legitimacy of the use of force to protect Russian interests in the states of the Baltics and in the Transcaucasus. However the Russian military today are less inclined to flex their muscles in the near abroad than the nationalist-minded politicians."

The reaction to the publication of the "Basic Provisions of the RF Military Doctrine" was somewhat different from that of the West in the new independent states appearing on the territory of the former USSR and in the countries of Central and Southeastern Europe, which had earlier belonged to the Warsaw Pact Organization. The public and the mass media of these countries, and their political figures, referring to the military doctrine of the RF, suggested that in the course of its development the "hard" line of that portion of the Russian military and politicians who favored the restoration of the USSR, display neo-imperialist tendencies toward the former socialist countries, and strive to return them to the Russian sphere of influence, had won out. It is stressed that the only way out for these countries and former Soviet republics in the present situation is to join NATO or obtain security guarantees from the U.S. and other members of the North Atlantic Alliance.

A number of critical comments regarding the RF military doctrine were also expressed in the Russian mass media. To some authors the abandonment of the obligation of no first use of nuclear weapons seems dubious, inadvisable and damaging to the interests of the national security of Russia. Other authors express regret that the document on the basic provisions of military doctrine did not say a word about the need to move to voluntary, contract-based military service, and that the Defense Ministry must be headed by a civilian while the General Staff would exert operational command and control. Fears were expressed regarding the fact that if the army is involved in a struggle with an internal enemy (separatists, saboteurs, bandit formations and the mafia), this would excessively increase the role of the Defense Ministry and its leadership, and their influence on the formation not only of the foreign policy, but also of the domestic policy of Russia.

Of course, the "Basic Provisions of RF Military Doctrine" is by no means an ideal document of the transitional period, which will be corrected and improved depending on the development of the domestic political situation in Russia and its relations with foreign countries, and the general situation in the world. But even now it is evident that the basic provisions of Russian military doctrine determine the particularly defensive tendency of the work of safeguarding the security of the RF and its allies, and confirm the resolve to achieve implementation of the ideals of humanism, democracy, social progress, and universal security and peace.

## GROUND TROOPS

### Specifications of DRAVA and DRAVA-T Fire Control Systems

*95UM0186B Warsaw NOWA TECHNIKA WOJSKOWA in Polish No 11, Nov 94, pp 8-9*

[Unattributed article: "Industrial Optics Center: Specifications of DRAVA and DRAVA-T Fire Control Systems"]

[FBIS Translated Text]

**I. Introduction**

Next to defenses against anti-tank weapons, improvement of the fire efficiency of tanks, achieved through the use of modern canon fire control systems, is the most important area of tank modernization. The Industrial Optics Center manufactures fire control systems (FCS) which guarantee a desired fire efficiency.

The basic functions that can be accomplished with the aid of FCS are the following:

—day- and nighttime observation and identification of targets, carried out by observation/sighting devices;—range measurement with a high precision, achieved with a laser range finder;—automatic rapid processing of firing data necessary for accurate targeting.

The DRAVA Fire Control System for a tank canon was designed expressly for the T-72 tank series based on manufacturing experience accumulated in the Polish industry and years of practical operation experience gained by the Polish Army with the Merida fire control system for the T-55 tank.

The new design concepts make it possible to install the system on tanks without modifying the existing assemblies and equipment, in particular, without changing the canon stabilization devices. As a result, the cost of modernization is relatively low and the system can be installed even in field conditions. Storage, servicing, and maintenance/repair are simplified to the maximum possible degree.

The fire control system design permits the use of existing sighting devices. As a result, one can use, on a T-72 tank (depending on the version of the system), a TPD-K1 sight modernized by PCO [Industrial Optics Center] and incorporated in the new system.

**II. Function... Features of the DRAVA Fire Control System**

1. A significant increase of the probability of hitting a stationary or moving target with the first shot.

   This is achieved by a rapid and precise determination and adjustment in the computation algorithm of all factors that can affect the firing precision, in particular:

   —relative position of the sighting line and the canon;—adjustment for the target movement;—weather conditions;—shell type;—and the charge temperature.

2. Rapid triggering of the first and subsequent shots.

   The system permits fast computation of adjustments, thanks to an automatic input of data from sensors to the computer and frequent data updating. Both the driver and the chargeman have means to monitor the range measurement data.

3. A passive night sight.

   The night sight with passive second-generation light amplifier in this FCS makes it possible to identify and track targets in night conditions or in twilight without revealing one's own position (i.e., without using a reflector as a source of infrared radiation).

4. System adaptation for work with a thermal vision sight.

   The system has been designed so that it can operate with a thermal vision sight. This is achieved by providing an electrical interface as a power source and communication with the thermal vision sight according to RS 422 standard.

5. A high system reliability.

   A high FCS system reliability has been achieved due to the following:

   —retaining the existing possibility of using TPD-K1 sight on T-72 tank, while simultaneously being able to utilize the firing data produced by the FCS computer;—the possibility for the IOC passive sight to operate both in daytime and in twilight;—the possibility for thermal camera to operate both in day- and nighttime.

6. Simple system maintenance.

   FCS is simple for service both in the course of firing and during tests. This has been achieved by incorporating in the program a test which automatically verifies all sensors. An electronic data adjustment is possible by input of correction constants.

**III. Technical Description of the DRAVA FCS**

**1. Basic Principles**

The DRAVA fire control system was designed for modernization of the T-72 tank in accordance with the specifications approved by SBiRTW [abbreviation not expanded].

The main specifications for FCS were defined as follows:

—day- and nighttime observation and identification of targets by means of a modernized TPD-K1 sight, a PCN-A night sight, or a thermal camera;—measurement of the range to the target with the accuracy of 10 m;—rapid and automatic processing of firing data;—preservation of the standard functions of the TPD-K1 sight.

**2. Description of Main System Assemblies**

**2.1. Daytime Sight with Laser Range Finder**

The daytime sight is a Soviet laser range finder modernized by PCO. As part of the modernization, the periscope head of the sight was furnished with a sensor of the revolving mirror position relative to the tank turret.

The sight was also provided with a servomechanism for automatic horizontal movement of the sighting mark, and

the range finder distance counter was adapted to work with the digital computer of the DRAVA FCS.

The chargeman panel also now has switches for system service and a monitor informing the chargeman of the data being processed by the system.

### 2.2. PCN-A Passive Night Sight

A second-generation passive image amplifier is used in this design. It permits observation, identification, targeting, and range measurement at night and in daytime. The range measurement is carried out by a laser range finder built into the day sight by means of opto-lectronic coupling of the sighting axis of the night sight and the range finder.

The range of tank target identification for targets illuminated by reflected moonlight and with a good air transparency is approximately 1500 m. The sight has electronic and mechanical coupling of the periscope mirror and the mirror of the daytime sight periscope. The sight angles (so-called superelevation and lead angles) being processed by the system are visualized by means of an automatically moving light spot.

### 2.3. Thermal Camera

The thermal camera serves for observation, identification, aiming, and measurement of the distance to the target at night and in daytime. (For a specification, see 5.7 below.)

The DRAVA system is designed so that the conjugation of the current camera mirror with the day sight mirror, the method of visualization of the superelevation and lead angles, the measurement of the range, and the sighting method are similar to those used in the night sight. The thermal camera is provided with an additional monitor situated in the driver's compartment.

### 2.4. Driver Control Panel and Monitor

The driver's control panel and monitor provide access to the control of the computer and the laser range finder and plays the role of the operative panel for the entire system before a shot is fired. The panel is equipped with built-in tests for checking the proper functioning of the system and the stability of zero settings of sight axes. All information on the driver's monitor is simultaneously displayed also on the chargeman's monitor.

### 2.5. Electronics unit

The electronics unit with a ballistic computer performs the following:

—conjugation of sights with the canon based on reading and analog-to-digital conversion of signals received from the canon position angle sensor and the periscope mirror position sensor for computing the difference between these angles and then converting the result to the signal controlling the canon drive;

—an automatic fire control algorithm, which includes the reading and analog-to-digital conversion of a series of signals from the sensors measuring the parameters of the shell flight trajectory, computing on this basis ballistic corrections, and performing an automatic input of corrections into the sight.

### 2.6. Sensor assembly

The DRAVA FCS is provided with a set of sensors for measuring and transmission to computer of the values of physical variables that have a significant effect on the shell trajectory. The following values are measured:

—the canon position angle relative to the turret;—the tilt and pitch of the canon on trunnions;—the turret rotation;—wind speed;—the tank movement speed;—the angular speed of the target;—the air temperature;—the powder charge temperature.

## 3. Components of the DRAVA FCS for the Individual Versions

The following components are included in the two DRAVA versions:

DRAVA: PCN-A passive night sight

DRAVA T: Thermal camera

The following is included in each version:

—modernized TPD-K1 sight—driver's control panel—driver's monitor—canon elevation angle sensor—turret rotation angle sensor—gyroscopic and digital sensor for turret rotation angle variation—set of gyroscopic sensors for turret tilt and pitch—sensor of weather data—charge temperature sensor—tank speed sensor (standard tank equipment)—electronics unit with a ballistic computer—central system power source—night range measurement switch.

## 4. System Operation Description

The system can operate in three modes: automatic, manual, and emergency.

### 4.1. Automatic operation

This is the basic operation mode, with the periscope mirror stabilization and canon mirror stabilization systems activated. After the range is measured, the computer, using the data from the sensors and the measured range, calculates the firing data. The azimuth correction is entered into the sight, causing an automatic shift of the sighting mark, while the elevation correction is entered into the canon stabilization system, producing an automatic movement of the canon.

### 4.2. Manual operation

This operation mode is used to fire from a stationary tank when the periscope mirror and canon stabilization system are not activated. After calculating the firing data by the computer, both corrections for the azimuth and for the elevation are entered into the sight, resulting in an automatic movement of the sighting mark along two axes. The canon is moved to appropriate firing angles by causing the sighting mark to register with the target.

#### 4.3. Emergency operation mode

The emergency operation is provided in case of a damage of the FCS elements or other tank components that would make automatic operation impossible. In that case, the sight mirrors are mechanically connected to the canon and, for each sight, elevation corrections are entered through manual grids with the sighting mark, while the azimuth correction is achieved by moving the mark from the scale axis by the correction value. For the emergency operation, the sight mirrors are coupled mechanically to the canon.

### 5. Basic Tactical and Technical Data of DRAVA FCS

5.1. Data entered automatically:

—range to target, 500-700 m (+/- 10 m)—target position angle, +/25° (+/ 1)—inclination of canon trunnions, +/15° (+/ 1)—canon elevation angle, 100—350 tys. +/ 0.1 tys.—turret rotation angle, 0—6000 tys. +/ 12 tys.—turret revolution angle increment, +/ 100 tys. +/ 0.2 tys.—tank movement speed, 0—90 km/h +/ 1 km/h—air temperature,—50 °C—+65 °C (+/ 2 °C)—charge temperature,—50 °C—65 °C (+/ 2 °C)—opposite air speed, +/ 40—+40 m/s (+/ 2 m/s)

5.2. Data entered manually:

—distance to target, 0—7000 (+/ 1 m)—target movement speed, 5, 10, 15, 20, 30, 40, 60, 80, 150 km/h—shell initial speed variation,—3.5—+0.5% (+/0.5%)—atmospheric pressure, 640—810 mm Hg (1 mm Hg)—air temperature T,—50 °C +65 °C (1 °C)—charge temperature,—50 °C—+65° (1 °C)—opposite air speed, +/ 40 m/s (+/ 2 m/s)—type of shell: high-explosive, common shells, incendiary shells, shaped-charged shells.

5.3. Computer output data:

—sighting angle, 0—100 tys. (+/ 0.1 tys.)—adjusted azimuthal angle, +/ 40.0 tys. (+/ 0.2 tys.)

5.4. Laser range finder:

—pulse energy, 50 mJ—beam divergence, 1 mrad—laser wavelength, 1.064 μm—pulse rate, every 3 s

5.5. Daytime sight (modernized TPDK-1):

—magnification, x 8—field of view, 9°—vertical correction range, 58 tys.—horizontal correction range, +/ 30 tys.

5.6. PCN-A nighttime sight:

—amplification, x 5.4—field of view, 5.6°—vertical correction range, 58 tys.—horizontal correction range, +/ 37.6 tys.—image amplifier, II-plus generation or a compatible replacement version

5.7. Thermal camera:

The camera has the following features:

—spectral range, 8-12 μm—narrow field of vision (FOV): 3° x 2°—wide field of vision (WFOV): 10.5° x 7°—NFOV enlargement, x 5.5—WFOV enlargement, x 1.6—detector type, MCT—number of detector elements, 120—cooling: Stirling type close cycle—detection range (for tank-like targets): NFOV, 7000 m WFOV, 4000 m—NFOV identification range, 4000 m—readiness time, 10 min

5.8. Ballistic computer:

—computation time, 0.2 s—microprocessor, 8—bit—permanent memory (ROM), 8 kB—random access memory (RAM), 1 kB

5.9. Central power supply system:

—input voltage/vehicle circuits, + 26(+3/—2) V—output voltages, 2 x +5V/10 A 2 x +15V/1 A 2 x -15V/1 A—average power consumption, 150

## Standard TO&E, Mission Capability of Airborne Units

*95UM0186A Warsaw NOWA TECHNIKA WOJSKOWA in Polish No 11, Nov 94 pp 4-7*

[Article by Jerzy Tomaszs Kajetanowicz: "Airborne Troops of the Commonwealth of Independent States"]

[FBIS Translated Excerpt]

The airborne units of CIS belong to the most effective and elite elements of the military. The high level of combat readiness and the degree of "armoring" that is not found in other nations enables them to execute missions in diverse war theaters. They have demonstrated their effectiveness during the first stage of the war in Afghanistan and were responsible for the quick capture of strategically important regions. In recent years, these units have been the first to take part in local conflicts on the terrain of individual CIS states. Thus, they were used during the military putsch in Russia in 1991, as well as during the emergency situation in Moscow in 1993.

In the 1960s, the airborne units of the Soviet Army began landing military vehicles on freight parachutes. The first vehicle fitted to this task was the ASU-57 self-propelled canon, which at that time was the basic support element of airborne units. Experience with the landing of this vehicle was utilized subsequently to expand the technique to other vehicles. The BMD-1 airborne military vehicles were designed specially for that purpose. They included attachment points for mounting parachute systems and modified hooks for attaching the vehicle to a platform. Adjustable clearance made it possible to reduce the height of the vehicle for an easier loading on a plane. Similar features were observed in the next models, BMD-2 and BMD-3, as well as in the BTRD armored personnel carriers built on a modernized BMD-1 chassis and the Nona 2S9 mortars. In addition, the common BRDM-2 armored vehicles and tank destroyers based on the same chassis were also used for airborne operations. The only military vehicle that was not adapted for parachute landing was the ASU-85 armored canon. A large amount of armor in airborne divisions (over 300 per division) led to a continuous improvement of landing techniques. Aside from slow standard parachutes, there appeared rocket parachute systems, which made it possible to expedite the attainment of combat readiness. Landing from lower altitudes was also

introduced with the use of special pull-out parachutes or ground braking devices. The increase in the amount of airborne hardware was also affected by the introduction, in the 1970s and 1980s, of new transport planes and helicopters with a large carrying capacity, as well as improved loading methods. ...

**Organization of Airborne Units**

The main airborne units in the CIS are airborne divisions [DPD]. Currently, there are nine such divisions: DPD 6, stationed in Byelogorsk, DPD 7 in Kovno, DPD 44 in Yonava, DPD 76 in Pskov, DPD 98 in Kishinev, DPD 103 in Vitebsk, DPD 104 in Kirovabad, DPD 105 in Fergana, and DPD 106 in Tula. Organization structure of a DPD includes the following elements (Diagram 1):

—command and headquarters;—3 airborne regiments, an artillery regiment and an anti-aircraft artillery regiment;—battalions: reconnaissance (equipped, among other things, with 10 BMD, an engineer battalion, transport battalion, supply battalion, and medical battalion);—antitank artillery battalion (equipped with ASU-85 armored canons);—companies: command and control, chemical defense, and repair and maintenance.

The total personnel strength of a division is 7900 men.

Military hardware: BMD1 and BMD2 AFVs, 331 each; BTRD, 69 each; ASU-85 canon, 31 each; BRDM-2, 30 each; and Nona 2S9, 19 each.

An airborne regiment is the basic combat subdivision of DPD. It consists of the following elements:

—command and headquarters;—3 airborne battalions (with 33 AFV each);—companies: reconnaissance, transport, and communications;—batteries: mortar, anti-tank, and anti-aircraft ordinance;—platoons: reconnaissance, chemical defense, and materials/repair;—medical section.

The personnel strength of a regiment is 1700 men. Military hardware: BMD, 101 each; BTRD, 23 each; BRDM-2, 10 each; and Nona 2S9, 6 each.

Aside from airborne divisions, the army also has airborne brigades [BDS]. A brigade consists of the following (Diagram 2):

—command and headquarters;—battalions: airborne (with 31 AFV) and 4 shock trooper battalions;—artillery battalion;—companies: reconnaissance, administrative, engineers, medical, communications, transport, and materials/repairs;—batteries: anti-tank artillery, anti-aircraft guns and mortars;—chemical platoon.

Personnel strength of a brigade, 3400. Hardware: BMD AFV, 31 each; BRDM-2, 10 each; Nona 2S9, 12 each.

An airborne BDS battalion consists of the following elements:

—command and administrative platoon;—three airborne companies (with 10 AFV in each);—Nona 2S9 self-propelled canon/mortar battery;—platoons: anti-aircraft and support.

Personnel strength: 500. Military equipment: 31 BMD AFV, 6 Nona 2S9 mortars.

In 1992, the CIS states had the following airborne troops:

—Russia, 6 divisions, 2 brigades;—Ukraine, 1 division, 2 brigades;—Byelorus, 1 division, 1 brigade;—Uzbekistan, 1 division;—Kazakhstan, 1 brigade;—Turkmenia, 1 brigade.

Altogether, the CIS nations had 9 divisions and 7 brigades equipped with over 2400 BMD AFV and 650 Nona 2S9 self-propelled mortars.

**Principles of the Use of Airborne Units**

Airborne units can be used for various military missions. The following missions are possible:

—capturing important points (river crossings, passages, etc.) and areas deep behind the enemy front lines and holding them until arrival of the basic forces;—preventing enemy reserves from approaching the area;—cutting off retreat routes for retreating enemy units;—supporting general military units in circumventing operations;—gaining command of and destroying major rearline facilities (airfields, supply bases, storage of mass destruction weapons, etc.);—disorganization and destruction of command and communication centers, communication nodes, etc.

These missions are accomplished on a strategic and operational scale and in exceptional situations also on a tactical scale. This depends primarily on the size of the available forces and equipment and the current combat situation. In principle, the units with armor are transferred to the theater of operations in the second stage after airfields have been captured initially by light airborne schock units. In exceptionally favorable situations, when the anti-landing defense is weak and the reconnaissance of the terrain is good, it is permissible to land simultaneously the schock units and the armored units.

After landing and bringing themselves to combat readiness, these troops perform their mission according to the tactical principles used by regular mechanized infantry divisions.

In the execution of typical missions (capture of territory, support to general military units) they may undertake decisive offensive actions in order to capture certain lines. The assault is normally conducted on military landing vehicles supported by the fire of self-propelled mortars. In case of a deployed anti-tank defense and at night the troops move on foot. The landing troop carriers then serve as vehicles of combat support to the infantry destroying, from behind natural terrain shelters, the sources of fire they can identify. In case of a strong enemy opposition, airborne units organize support stations and pass to circular defense. The vehicles are then placed in sheltered firing positions, affording a full use of their firing power, particularly, of canons and anti-aircraft weapons. For missions which involve destruction or occupation of certain objects (airfields, bases, stores, etc.) the units equipped with military vehicles, after landing, which is usually done at night, move to the indicated area and launch an assault at

dawn. After the facility is captured, they organize defense and create conditions for the landing of the next wave of airbornes or wait until the basic overland units join up with them.

The high level of training of airborne divisions, the relatively large amount of material supplies (ammunition, fuel, and food) enable them to continue combat for a long period of time, estimated for a battalion as 12 hours, a regiment as 24 hours, and a division over three days. All the missions are implemented in close cooperation with the tactical front-line airforce and the aircraft of the landing troops, which conduct bombings of the objects being attacked, isolate fields of battle, and ensure local air control in the operation theater, as well as securing the incoming flight troops of the next landing wave.

### 1) Transport Planes and Helicopters

The first transport plane that was used for air transfer of AFV was the AN-12 aircraft designed by O. Antonov. It was built in 1956 and introduced into use by the army in the early 1960s. With the maximum useful load carrying capacity of 20,000 kg, the aircraft could carry two platforms with a load of 7,000 kg and fly to a distance of up to 2000 km. The aircraft was manufactured in large quantities for the military, as well as for civilian aviation (over 900 units). In 1992 Russia had 300 such planes, including 100 in the airforce.

In 1963 the tests were made of the prototype of the Anteus AN-22 aircraft. Two years later, this plane was demonstrated at the Paris show, where it caused sensation as the largest plane in the world. The carrying capacity of 80,000 kg permits this plane to transport five platforms with combat vehicles to a distance of up to 5000 km. The Russian Air Force has 55 such planes.

In the early 1970s, the S. Ilyushin Design Bureau built a transport aircraft with a jet engine. After four years of tests, in 1975, the series production of the military version of this aircraft, designated IL-76M, was launched. The maximum load-carrying capacity of 4000 kg allows this plane to carry three platforms with BMD-1 and BMD-2. For easier loading, the aircraft is equipped with an overhead crane that can carry 30,000 kg. The range of this plane is the same as that of AN-22: 5000 km. IL-76M has become the basic transport plane of airborne troops in the CIS. Russia's military alone has 435 such planes. A large number fly in civil aviation. They can be quickly converted for military use.

In 1982, the MI-26 heavy helicopter was put on line for series production. The payload of this helicopter is 17,800 kg, and thanks to a large loading volume, it can carry two armored vehicles to a range of up to 800 km.

The largest transport plane in the CIS airforce is the AN-124 Russian jet aircraft, which was publicly exhibited in 1985. Its carrying capacity of 150,000 kg allows it to transport an airborne company (10 AFV) in a single flight to a distance of up to 4500 km. In 1992 Russia had 29 such planes.

### 2) Parachute and Parachute-Rocket Systems

Combat vehicles BMD-1 and BMD-2, as well as armored personnel carriers BTRD, are dropped from planes with the aid of MKS-5-128-R and MKS-5-128M parachute systems connected with P-7 parachute platform.

MKS-5-128R parachute system can be used to drop loads with weight up to 9500 kg from altitudes 500-1500 m, with aircraft speeds of 260-400 km/h. The descent speed for a weight of 8500 kg is 8.8 m/s, for a payload of 9500 kg, 9.5 m/s. The system's service life is 12 years. The permissible number of landings is 5, including the first drop-down with the maximum load of 9500 kg, and subsequent drop-downs with loads of 8500 kg. The system consists of the following elements:

—the VPS-8 pull-out parachute, which pulls the platform out and activates the other parachutes or pulls AFV in a system of rocket parachutes. The chute dome surface is 8 $m^2$;—DVP pull-out parachute, which serves for correct activation of braking and main parachutes. The dome surface is 30 $m^2$;—braking parachutes, which serve to decrease the descent speed to a level permissible for activation of the main parachutes. The dome surface is 20 $m^2$; the number of parachutes is 4-5;—main MKS-5-128R parachutes, which serve for safe descent and landing of the platform with the hardware. A system is comprised of 4-5 such parachutes with the dome surface of 760 $m^2$ each.

MKS-5-128M parachute system can be used for dropping loads up to 8500 kg from an altitude of 500-8000 m with aircraft speeds of 320-400 km/h. The descent speed with maximum payload is 7 m/s. The system service life is 12 years. Permissible number of descents is 1-5, depending on the weight, landing altitude, and aircraft speed. The system consists of the following elements:—the VPS-12130 pull-out parachute, which serves for the pulling-out of the platform and activation of the remaining parachutes; the dome surface is 8 $m^2$;—the stabilizing parachute, which serves to stabilize the platform with a speed of 40-50 m/s and to pull out the braking and main parachutes after engagement of a lock with the altitude meter ZSP-60M; the dome surface is 30 $m^2$;—braking parachutes, which lower the descent speed in order to enable the main parachutes to be activated; the dome surface is 20 $m^2$;—main MKS-5-128M parachutes, which guarantee safe landing of the platform. The number of parachutes in a system is 4-5, with a dome surface of 760 $m^2$ each;—attachment system.

The PT parachute platform is used for landing military hardware and other loads with the weights from 3750 to 9500 kg from AN-12, AN-22, and IL-76 aircraft flying at speeds of 260-400 km/h. The platform consists of the following: a metal payload platform with separable wheels and a system of attachments, air shock absorbers, R-128 sensor, and equipment that is used for various configurations of loading. The platform itself weighs 1100-1220 kg. Additional equipment for loading and attachment has the following weights: for BMD-1, 277 kg; for BTRD, 297 kg. The platform service life is 10 years with two overhauls; the maximum number of landings, 15.

The RVS-950 parachute-rocket system can be used to land loads with weights of up to 13,500 kg from altitude 500-1500 m from a plane flying at 320-400 km/h.

The system consists of the following elements:

—VPS-8 pullout parachute, which serves for pulling out the AFV from inside the loading area and for activating the stabilizing parachute;—the stabilizing parachute, which serves for stabilizing the flight of the load and for pulling-out the main parachute;—the main parachute with dome surface 950 $m^2$, which reduces the descent speed and sets the rocket engines into a position where they can be ignited;—the rocket unit, which consist of 4 jet engines connected to a system of telescopic sensors, which are extended after activation of the main parachute from attachments on the side of the combat armor of the descent vehicle to a distance of 2.5 m below the lower edge of the crawler tracks.

As the sensors hit the ground, all the rocket engines are activated simultaneously and lower the speed of the AFV descent to a value that makes safe landing possible. After the parachute and the crawler tracks are disconnected, the vehicle is ready for combat. The crew and other troops taking part in the landing can be inside the vehicle at the time of descent. This method of landing was for the first time tested in the late 1970s. The first such landing was done in a BMD-1 vehicle by the crew commanded by Lt V. Alymov. The success made it possible to use this method for landing of large groups. The RVS-950 system was also adapted to AFV BMD-2 and the BTRD armored personnel carrier.

**Landings from Low Altitudes**

Airborne combat vehicles can also be dropped from aircraft flying at low altitude (a few meters above the landing area). Two basic drop-down methods are used:

1) Drop-Down with Pull-Out Parachutes. The method is based on throwing out of the rear hatch a small parachute, which pulls out the platform with the hardware from inside the plane. The platform lands, and impact against the ground is reduced by a system of shock absorbers. If the landing area is sufficiently large, it is possible to land the entire cargo in a single overflight. This method does not require a previous preparation of the landing area and can be used in conditions where the enemy anti-landing defense is weak. It is also recommended because of its advantage: a relatively short time required for attaining the combat readiness by these troop units. However, it requires considerable skills on the part of the pilots of the transport planes.

2) Drop-Down Using Ground Braking Devices. This is done after the landing area is first occupied and prepared. The role of the pull-out parachute in this case is played by cables on reels with a braking device, which are stretched across the landing area. A cable with a hook is thrown out of the plane. After catching against the braking line, it pulls out the platform with the hardware.

**Basic Characteristics of Armored Hardware**

In mid-1980s, it was recognized that the modernization potential of BMD-1 and BMD-2 had been exhausted. Making use of the experience obtained in the development of the next types of bwp and local military conflicts, the principles for the design of a new AFV were defined. This was to be a vehicle of a new generation providing much better conditions for combat to its crew (mainly by a broader use of all kinds of electronic devices) and which was supposed to have large capabilities for conquering a forbidding terrain and be suited for a wide range of military missions. After several years of work on this project in the early 1990s, the first prototypes of the vehicle, designated BMD-3, were created. Soon thereafter, the vehicle was put into series production as the successor of the earlier vehicles of this type. BMD-3 is currently offered by Russia for sale abroad as a multi-mission vehicle for land troops, airborne troops, marine troops, and the police.

Based on the experience obtained with the operation of BMD-1 in the late 1970s it was decided that it could serve as a prototype for a modernized general-purpose armored personnel carrier for the needs of airborne troops. In 1981 this vehicle, designated BTRD, began to be introduced into the units. Compared with BMD it had a body longer by 0.5 m and an additional pair of wheels. Only two machine guns mounted at the front of the body were retained from the weapons of the earlier version. These guns were manned by two airbornes seated on both sides of the driver/mechanic. The personnel section accommodates 11 servicemen.

The "armoring" of airborne units made it necessary to provide them with an appropriate artillery support. Utilizing the BTRD chassis, a new fire support vehicle was created. It was demonstrated publicly during the military review in May of 1985. The vehicle was purchased by the military under the name Nona 2S9 as a basic artillery weapon system suited for landing with parachute and parachute/rocket systems. The vehicle is armed with a 120 mm howitzer/mortar with the firing speed of 6-10 round/min and effective fire range of up to 8000 m. The ammunition reserve is 60 rounds, which includes common shells, incendiary shells, shaped-charged shells, as well as smoke and illuminating shells.

The weapons of the airborne troops include also ASU-85 armored self-propelled canons and BRDM-2 self-propelled vehicles in two versions: reconnaissance and for destruction of tanks with rockets. It is furnished with ATGMs. ASO-85 armored canons have been used since the 1970s as an anti-tank or support weapons. Because of their weight they cannot be dropped on parachutes, and the only way for delivering them to the combat area is by air to previously occupied airfield or an appropriately adjusted landing area. This is a serious flaw of this vehicle. Since the design of ASU-85 is obsolete, one should expect that shortly it will be retired and its role will be taken over by tank destroyers on tracked chasses of an armored carrier such as Sturm-S.

The BRDM-2 armored self-propelled carrier is the only military vehicle, which is used by other types of troops, as well as the Airborne Troops. In the version of the reconnaissance vehicle, it is the basic hardware of reconnaissance battalions of a brigade or a regiment of Airborne Troops. In the tank-destroyer version, it is in the inventory of anti-tank batteries of airborne landing/schock regiments and brigades.

### Problems in 14th Army Withdrawal From Dniester

*95UM0306A Moscow KRASNAYA ZVEZDA in Russian 23 Feb 95 p 3*

[Article by Sergey Knyazkov: "Although Agreement Has Been Signed, It Is Entirely Unclear: Will the 14th Army Be Able To Leave the Dniester Region?"]

[FBIS Translated Text] On the background of the tragedy in Chechnya, many important events which formerly attracted the attention of the community have seemed to fade into the background. However, this has not changed their acuteness. This is true in full measure also of the events surrounding the 14th Russian Army stationed in the Pridnestrovye [Dniester region]. A discussion has again arisen in Moldova about when and how to begin the countdown of the three-year term for the withdrawal of the 14th Army specified in the treaty signed by the governments of the two countries. This discussion was motivated by the talks which were held recently in Kishinev between the delegations of the ministries of defense and foreign affairs of the two countries. These talks dealt with the transfer to the Homeland of Russian troops and material property, with pension provision of military servicemen and their families, and with inspection of the 14th Army. At that time, the head of the Russian delegation, Special Envoy Vladimir Kitayev, emphasized that Russian and Moldovan diplomats are concerned by the "incompleteness of all documents supplementing the basic agreement." They must be ratified before the countdown of the three-year period for withdrawal of Russian troops begins. Primarily, this concerns the immovable property remaining on the territory of the Dniester region. The army is taking a significant portion of the movable property with it. But part of the munitions, especially those which are not subject to transport, will be sold or, by agreement with the Moldovan side, destroyed on site.

The terms and material aspect of the withdrawal of the Russian Army concerns not only the leadership of Moldova and Russia, but also the Dniester region itself. The news agency ITAR-TASS reports that on the very day when the Russian delegation flew home, the head of the PMR [Pridnestrovye Moldovan Republic] Igor Smirnov, issued an edict prohibiting local legal entities and individuals from "removing from the territory of the region the property acquired by the 14th Army of Russia," since the agreement signed by Moscow and Kishinev "does not take into consideration the interests of the Pridnestrovye region."

The Supreme Soviet of Pridnestrovye also added some "heat." On 15 February it adopted an appeal to the Federal Assembly of Russia with a proposal to refrain from ratification of the agreement on the withdrawal of the 14th Army and to comprehensively discuss this problem with participation of representatives of the PMR. The appeal states that the Russian Army is the guarantor of security and stability in the Dniester region.

It will be necessary to listen to the Russian senators and to the opinion of the commander of the 14th Army, Lt.-General Aleksandr Lebed: "A large part of the military servicemen in the army are natives of these places, and will not go anywhere." And today, in his opinion, the situation is such that it will only be able to leave the region with a flag and official seal. "And instead of organized units, we will get something that is well-armed and unmanageable in the center of the contingent."

## UKRAINE

### Western Formation Commander Interviewed on National Guard Mission

*95UM0274A Kiev NARODNA ARMIYA in Ukrainian 1 Feb 95 p 1*

[Interview with National Guard of Ukraine Western Formation Commander Guards Major-General Yaroslav Bohdanovych Yaniv by ARMIYA UKRAYINY special correspondent Stepan Kuts under the rubric "Firsthand": "The Guard Exists To Protect the State and Its Citizens"]

[FBIS Translated Text] *We are now in the fourth year since the creation of the units and subunits of the Western Formation of the National Guard of Ukraine [NHU], a new military structure in the region, called upon to be the guarantor of the stability of the nation and the peace and security of its citizens. Our correspondent discussed with the commander of the formation how this complex process is transpiring, and what has already been achieved.*

[Kuts] Yaroslav Bohdanovych, have the creation and disposition of the units of the formation where they are to be stationed been completed? Are they justifying their purpose? What tasks are they performing?

[Yaniv] The process of creating the units of this formation has not yet been completed, it is continuing. Preparations are underway for the creation of units in the cities of Rivne, Uzhhorod, Khmelnytskyy and Chernivtsy—the personnel are being selected and the physical plant is being prepared. Their basing locations will be provided by the local authorities.

Today both the "old" units that are stationed in Lviv, Ternopil and Ivano-Frankivsk and those that were formed last year in Lutsk and Drohobych are engaged in planned combat and special training, as well as the performance of duties to protect civil order and wage the fight against organized crime.

The units of the formation, according to a presidential edict of 21 July 1994, were involved in the conduct of the Nevod, Vokzal, Tral, Rynok and Mak-94 broad-scale operations, among others, for this purpose; they were aimed at eliminating criminal groups. The personnel have a conscientious and understanding attitude toward the performance of these, frankly speaking, difficult tasks. There have been no instances where guardsmen have violated any laws or committed any unlawful actions against citizens.

[Kuts] Our readers would be interested in hearing concrete examples, figures, say on the results of the "activity" of your subordinates in this area in recent years.

[Yaniv] My subordinates performed in full the tasks with which they were entrusted. There were more than eight hundred of them last year, of which more than seven hundred were to protect civil order, and in which many soldiers from the National Guard took part.

More than three hundred citizens were detained for crimes committed, and more than 9,000 for administrative offenses. Twelve pieces of weaponry and nine firearms were confiscated, and more than 25 million karbovantsi and several tonnes of gasoline were returned to the state. The Tral, Nevod and other operations detained more than 600 violators of order, including eight for committing crimes.

The fight against crime was best waged by the soldiers in the units commanded by Guards Colonel P. Kanonenko and Guards Lieutenant-Colonel V. Lavrenchuk. A battalion of guardsmen from our formation, by the way, took part in the first military parade in the capital on the 50th anniversary of the liberation of Ukraine from the fascist invaders, and won high regard from the leaders of the state and the command of the NHU.

[Kuts] So the guardsmen are earning their keep, as they say. What is the attitude toward them on the part of the administrations in the local areas and the public? How do they evaluate their actions and conduct? Are they helping?

[Yaniv] The administrative bodies in the local areas are meeting us halfway, as a rule. In Lutsk, Lviv and Ivano-Frankivsk, for example, they treat the guardsmen with respect, are well-disposed toward them and help them out. We have great support, incidentally, from the administration of Ivano-Frankivsk Oblast—they have fully equipped a medical station for our unit in particular.

We have good relations with the commanders of the military district, garrisons, internal-affairs bodies and border troops. The attitude of some of the local administrations is equivocal—the authorities in Chernivtsy, for example, reluctantly decided to accommodate NHU units, referring to the fact that there are already military units in the city. But they and we have different tasks.

I would like 1995 to be a year of understanding by the local authorities, the population and any citizen of the status of the NHU, and that there be an understanding of the tasks that its units are performing. This could be facilitated by the mass media—the press, radio and television—if they would better inform the people of the service of the guardsmen.

[Kuts] How do you evaluate the results of the past training year? What was achieved that is new, what lines were you able to cross? How do you evaluate the level of training of the units and subunits?

[Yaniv] The units of the formation studied intensively and gained combat proficiency. The plans for combat, special and humanitarian training were fulfilled with high quality, thanks to laborious work and a well-planned teaching process. The results of the principal exam of the year—a rating of "good" from an inspection by the command of the National Guard of Ukraine that was received by the formation and most of the units—is testimony to that. The best ratings were achieved by the units commanded by Guards Lieutenant-Colonel Mykola Sadovskyy, Serhiy Hanushchak and Vasyl Lavrenchuk.

There have been problems as well, of course, primarily on the material plane—the lack of fuel, spare parts and matériel. But we found a way out here as well—we have been walking through the exercises, in order to economize in everything.

[Kuts] Judging from everything, the year 1995 will not be an easy one for the guardsmen. They have been waiting for years for the conditions of service, training and support to be favorable. How has the new training year started in the units? What problems worry the commanders?

[Yaniv] The new year started off fine, in an organized manner, with a clear understanding among the personnel of their tasks. The main task for the guardsmen of the formation this year is to maintain the levels of combat readiness and fighting ability of the units and subunits that already exist. There are conditions for that, even though there are problems as well.

The creation of the new units in the cities designated by the government that I have already mentioned, however, entails quite a few difficulties—the military compounds that have been allotted have to be assimilated, the personnel accommodated in them, the vehicles and weaponry obtained and accommodated, and the units brought to full strength.

We are very concerned about the problem of the acquisition of cadre personnel for the units. Officers from the CIS countries and from the Armed Forces of Ukraine are asking to come to us, but their assignment is being delayed for some reason. There is a particular shortage of specialists at the company level. It would be appropriate to help us obtain specialists in the air-defense missile subunits.

[Kuts] Are the necessary level of combat and special training of the personnel of units and subunits and the material base for training being provided where they are stationed? Is there an opportunity to conduct live training fire and tactical exercises?

[Yaniv] There is a pretty good training center in the units that are stationed in Lviv. But there are many problems—the barracks, mess hall, boiler room and dormitory all need repairs... There is no money for it. The conditions are fine for the training of personnel in the units at Lutsk. There is nowhere for the guard units stationed at Drohobych to train. The guardsmen from Boryslav travel 70 km to shoot, and that takes both time and fuel...

[Kuts] How are social problems—say, providing the families of officers and warrant officers with housing—being resolved? What are the prospects here?

[Yaniv] That is perhaps one of the most painful problems. The local administrations are helping us to solve it. There are prospects for providing housing in Lutsk and Drohobych. The families of servicemen have received eight apartments in Ternopil, and just one so far in Ivano-Frankivsk, but there is a building there whose construction we will be completing ourselves. A building with 90 apartments is being built in Lviv.

[Kuts] What are the primary tasks that the subunits should be accomplishing in the near future and over the winter in combat, special and humanitarian training?

[Yaniv] The main task is to bring the young replacements, by which most of the units are manned at 70 percent, into the ranks as quickly and effectively as possible. I would like to take advantage of the opportunity to propose that the acquisition of young soldiers for the units and subunits of the formation be conducted to an equal extent through conscription from the western oblasts of Ukraine and from the other oblasts where the units are stationed.

The principal efforts of the commanders during the wintertime are aimed at the individual training of the soldiers and the interaction of squads and subunits. And the tasks of ensuring civil order and fighting organized crime are constant ones for the national guardsmen.

The efforts of commanders and their deputies for indoctrination work to strengthen military discipline and cultivate high moral and psychological qualities, national awareness and patriotism among the personnel are no less important. This will be facilitated not only by engaging in humanitarian training, but also through the corresponding formation in the units and subunits of national-studies areas, combat honor rooms, museums and libraries. Especially during the preparations for celebrating the 50th anniversary of the victory over fascism.

The main thing is that the guardsmen have a high sense of patriotism, moral and psychological training, and a readiness to take any actions to protect the constitutional order of the nation and its citizens.

I would like to say in conclusion that the period of emergence of the National Guard has already passed, the units of the formation have been created and are, as they say, on their feet and able to perform any tasks.

[Kuts] Thank you, Major-General, for the interesting conversation. I wish the guards success in their difficult service.

## BELARUS

### Chief of General Staff Maltsev on Military Reform, Ties to Russia

*95UM0288A Moscow KRASNAYA ZVEZDA in Russian 22 Feb 95 p 2*

[Interview with Lieutenant-General Leonid Semenovich Maltsev, chief of the General Staff of the Republic of Belarus Armed Forces, by KRASNAYA ZVEZDA Correspondent Colonel Valeriy Kovalev, under the rubric: "In the Armies of the CIS": "Lieutenant-General Leonid Maltsev: We Will Strengthen and Develop Military Contacts With Russia"]

[FBIS Translated Text]

**From the KRASNAYA ZVEZDA Dossier:**

L.S. Maltsev was born in 1949 to a peasant family in the village of Viteneyevka of Slonamskiy [unreadable] Rayon in Grodnenskiy Oblast. He graduated from the Minsk Suvorov Military School and then from the Kiev Combined Arms Command School. He commanded a motorized rifle platoon, company and battalion in the Group of Soviet Forces Germany. After studies at the Military Academy imeni M.V. Frunze, he served in the Far East Military District. He entered the Military Academy of the General Staff from the post of chief of the military district

training center. After its completion in 1992, he returned to Belorussia where he was first deputy commander-in-chief of the army and, with its transformation into a corps, he became its commander. In August 1994, he was appointed chief of the General Staff of the Republic of Belarus Armed Forces.

[Kovalev] Leonid Semenovich, the previous leadership of the Belorussian Ministry of Defense planned to totally complete the process of the transformation of the troops of the Belorussian Military District into the Republic Armed Forces by January 1, 1995. Can we consider the reform of the Belorussian Army to be complete?

[Maltsev] If you take the purely formal aspect of the matter, then—yes. Everything that was planned has generally been accomplished. Troop strength has been substantially reduced. The transition from the former division-army system of their structure to the "brigade-corps" model has been completed. The corresponding command and control organs have been created. So, at first glance, a great deal of work has been done.

However, if you assess it critically and fundamentally, you must note that the emphasis was placed on a purely mechanical reduction of the Armed Forces while conducting the reforms. Qualitative transformations in the army were essentially not conducted. Although it is these transformations that should have become the core of the entire reorganization. Therefore, right now we have been compelled to make serious adjustments to the army's structural development program.

[Kovalev] Could you dwell on them in more detail...

[Maltsev] There are several directions here. First of all, the question on the revision of the structure of the Armed Forces is being worked through. In our view, there is no need to have separate airborne forces and air defense troops. Previously, when the Belorussian Military District existed, they accomplished various missions: the 2nd Independent PVO [Air Defense] Army was part of the former Union's unified air defense system and the 326th Air Army "operated" in the district. Now they have one mission—defense of the airspace of our small republic. Therefore, we consider it possible to combine the Air Force and the PVO Troops and to place them under a unified command authority.

Another innovation concerns the restructuring of the junior commander and specialist training system. Right now training units and subunits have been decentralized and are deployed at several military garrisons. This is economically disadvantageous. Furthermore, many people are removed from training to perform guard and internal service and to support everyday activities which has a negative impact on the quality of training. We plan to have one major training center for all of the Armed Forces at which specialists will be trained for all branches of troops. The OUTs [General Training Center] at Borisov will most probably become the base for it.

One other qualitative change is a transition from the extraterritorial to the territorial troop manning principle. Already right now, new recruits, not 100 percent, of course, but the majority of them, are being sent to serve in formations and units that are located near their place of permanent residence.

We are stepping up work on the transition to a system of contract service. In fairness, I must note that it was begun already under the Ministry of Defense's previous leadership. However, it was being conducted very slowly due to various types of man-made obstacles. Right now, they have all been abolished. As a result, we have managed to recruit on contract over 550 soldiers and sergeants during the last three months alone. The number could be significantly higher but the shortage of housing and financial resources is preventing that.

[Kovalev] But reductions are still continuing?

[Maltsev] What else can you do when you see that there are still superfluous, unneeded structures in the Armed Forces? Right now we are completing a 30 percent reduction of the ministry's central staff. We are reducing the number of plants' military representatives and military formal acceptance offices by approximately half—why do we need so many people in them if the volume of orders has been drastically reduced? We have begun examining the reserve officer training system at military departments of VUZs [higher educational institutions]. As of today, the supply of reserve officers is approximately 350,000. We simply don't need that many.

[Kovalev] Recently at an expanded session of the Belorussian Ministry of Defense Collegium, the results of the completed training year were summed up. You delivered the key note speech. I would like to hear your assessment of the state of combat training in the Belorussian Army.

[Maltsev] In brief, combat training was conducted in a mode that ensures the readiness of the Armed Forces to defend the sovereignty of the republic. These are not simply words. The combat training program was accomplished in practically all parameters.

All of the KShU [command and staff exercises] and tactical exercises that were planned, including brigade exercises, were conducted. RTU [radiotechnical exercises] were conducted in all companies. Live firings using regular combat rounds were conducted everywhere where that was appropriate. We even managed to organize competitions for the best tank and motorized rifle companies, for the best artillery officer, and a physical fitness review on an Armed Forces scale. Indeed, some lagging behind was permitted in the accomplishment of the programs for driving and for flying hours of pilots. This is associated with the acute shortage of GSM [POL—Petroleum, Oil and Lubricants]. Although, I will not begin to conceal the fact—that there were more than adequate difficulties, and serious ones, in the organization of the training process. The difficult economic situation in the republic is even affecting the army, first of all the officer corps. It is difficult for people. To the honor of officers, the majority of them, as they say, are performing their duties not out of fear but conscientiously.

[Kovalev] Leonid Semenovich, if you compare the level of the combat capability, say, of a motorized rifle regiment of

the former Soviet Army with this regiment of the current Belorussian Armed Forces, will the difference be very substantial?

[Maltsev] I detected notes of irony in your question. Nevertheless, I would not unconditionally award the chief laurels to the "old", so to speak, regiment. I dare to assure you that with all of the difficulties we are trying not to lower the bar of training requirements. They are quite high as before. Incidentally, here I can cite the opinions of others. The military attaches of a number of CIS countries, European states and the United States were invited to a tactical exercise of the 50th Mechanized Brigade. They gave high marks to the activities of the formation's personnel. No, thank God that combat training in our country has not yet been reduced to the level of the training of individual soldiers...

[Kovalev] Please tell me, how often do you have contact with Moscow? How are relations developing with the General Staff?

[Maltsev] We have quite a few opportunities to call and associate. This is most frequently associated with the presence of Russian troops on the territory of Belarus and their withdrawal. Questions that arise are always resolved in a businesslike and friendly manner without any conflicts whatsoever. We also have contacts on other problems that represent, to express them in diplomatic language, a mutual interest. It's clear that the content of the negotiations is currently different than during the times when the Belorussian Military District existed. At that time, Moscow mainly requested: give us this, give us that... Now we ourselves need to resolve our own problems. But this does not at all signify that we must, figuratively speaking, withdraw into our shell. We are not competitors with Russia and I am convinced that we will never compete. There are two fraternal Slavic states. There are their armed forces. And we need to do everything possible to strengthen and develop contacts between them.

## DEFENSE INDUSTRY & CONVERSION

### Condensed Energy Systems: Conversion Directions and Ways of Using Them for Solving Pressing Economic and Scientific-Technical Problems

*95UM0243A Moscow KONVERSIYA in Russian No 10, 1994 pp 3-5*

[Article by A. A. Rodionov, I. N. Bocharov, B. P. Zhukov, A. V. Dranishnikov and O. N. Ivanov, Russia]

[FBIS Translated Text] The search for and realization of rational, scientifically substantiated ways of converting the defense industry are one of the priority directions of Russian state policy.

It is generally known that conversion is a costly, lengthy process and that significant results can be achieved only in the intermediate or long term.

The conversion process which began in our country in 1989 had no analogues in world practice in scale and complexity. This was dictated by the exceptionally high rates of reduction in volumes of military production (12-14 percent per year with a generally acknowledged acceptable norm of 3-5 percent), which led to a decrease in the proportion of military products in the overall volume of products manufactured by defense enterprises from 62 percent in 1988 to 22 percent in 1993.

The progress of conversion has been complicated by the parallel radical perestroyka of the country's entire economy, by the change in the economic mechanism and by transformation of the former USSR's economic space.

Legal foundations for activity of defense industry enterprises and organizations are spelled out by the Law "On Conversion of the Defense Industry in the Russian Federation," which entered into force on 1 January 1993.

Drawing up the "Russian Federal Program for Conversion of the Defense Industry" became a most important stage in development of conversion.

The goal of the program is to make maximum use of the scientific-technical and industrial potential being freed up as a result of conversion of the defense complex to solve the most important socioeconomic problems of Russia's development.

Fourteen special programs are being realized within the scope of the federal program, encompassing such spheres of the economy as transportation and communications, power engineering and power supply, medicine, agriculture, the chemical-timber complex, and ecology. It is proposed to try to find over six trillion rubles and around $22 billion to realize the tasks posed.

A "Federal Program for Industrial Recycling of Arms and Military Equipment" also has been worked out. It is known that condensed energy systems—powders, solid propellants, explosives, pyrotechnic compounds and articles based on them—are an inalienable part of all kinds of weapons, from the simplest munitions to the most sophisticated missile systems and space objects. The life cycle of any weapon—"scientific search-development-production-operation"—envisages a particular method of ending its existence. As applied to condensed energy systems in the past, as a rule this meant detonation or various versions of incineration. The scale of the disarmament process which has begun, the scope of work coming up in the next few years for destroying both conventional as well as strategic weapons, and increased demands for environmental protection dictate the unacceptability of traditional ("simple") methods of eliminating arms.

The economic aspect of the problem to be solved also is very important. A state which has invested significant assets in developing and producing arms and military equipment would like to be compensated at least partially, with the help of scientists and engineers, for expenditures made at one time.

We see two ways of solving this complex, many-sided problem. One is to develop industrial recycling technologies meeting modern demands. The other is to use the unique properties of condensed energy systems to perform pressing economic and scientific-technical tasks in various spheres of human endeavor such as obtaining valuable chemical materials, prospecting for and producing useful minerals, fighting fires, predicting earthquakes, and developing outer space.

Without belittling the importance of the first direction of work, we would like to stress the significant reserves and potential capacities of the second one, which is dictated by the following:

- the nature of condensed energy systems as powerful, autonomous sources of concentrated chemical energy with characteristics controllable within a wide range;
- presence of national economic tasks performed most successfully using condensed energy systems;
- production capacities of enterprises for manufacturing condensed energy systems and the need for creating new jobs;
- high scientific-technical potential of the Russian defense industry.

#### Explosives and Explosive Compounds

It is common knowledge that explosives are typical representatives of dual-purpose condensed energy systems: a large portion of TNT, the most widespread high explosive produced in peacetime, is used as the basic component of many types of industrial explosives. It is therefore not by chance that meltable explosive compounds based on TNT (TNT-aluminum, TNT-RDX, TNT-RDX-aluminum) and obtained from recycling munitions found use in the mining industry as water-resistant, granular industrial explosives. The technology of obtaining stick charges of nonmelting explosive compounds based on RDX (retarded RDX-aluminum) is in the development stage.

Positive results were obtained in tests of shaped charges of RDX-TNT explosive compound, extremely needed by metallurgical enterprises for pulverizing masses of steel and cast iron.

The design of hose charges [shlangovyy zaryad] has been worked out for pulverizing large and superlarge dump truck tires (tire weight up to 3.5 t), which will permit organizing their recycling and thereby solving a major ecologic and economic problem of the mining industry.

Further research and development is aimed at using the explosive compounds extracted from munitions in linear shaped charges for cutting metal structures, in cords for creating fire breaks in putting out forest fires, and in special charges for hardening and welding metals and for breaking up outsize rocks.

A deterrent factor in using industrial explosives based on RDX-containing explosive compounds extracted from munitions is their increased sensitivity to mechanical effects.

### Pyrotechnic Compounds

The use of pyrotechnic compounds and articles based on them for civilian purposes has a broad spectrum and rich history. Well known directions of work include the following:

- using pyrotechnic compounds for obtaining holiday fireworks;
- creating pyrotechnic articles for fighting hail and for artificially inducing atmospheric precipitation.

A development based on thermosublimating, aerosol-forming compounds of ecologically safe pyrotechnic insecticides and bactericides for disinfestation and disinfection of animal husbandry and poultry raising spaces and other installations use for production and everyday purposes is of great practical importance.

Generators of ecologically safe firefighting agents have been created based on aerosol-forming pyrotechnic compounds. This precludes the need to use freons, which destroy the Earth's ozone layer, for these purposes and permits creating area firefighting systems satisfying modern requirements.

It should be noted that the ban on producing freons from 1994 and the upcoming rejection of their use stimulated a search for ways to replace these ecologically dangerous compounds in area firefighting systems. There have been studies of an alternative option of solving this problem using products of the combustion of special compounds of ballistite solid propellants as the working medium.

### Powders and Solid Propellants

It is commonly known that the energy of powders and solid propellants can be realized both in the combustion mode as well as in the detonation mode depending on the nature of the task to be performed and conditions of initiation. In addition, under certain conditions the combustion products of special solid propellants become the source of a powerful impulse of electrical or light energy. Thus, the nature of this kind of condensed energy system creates preconditions for its use to perform a wide range of scientific-technical and applied tasks.

Pyroxylin (monobasic) and ballistite (dibasic) powders extracted from munitions have found use as water-resistant industrial explosives already today in the form of a mixture of crushed elements of both types without any kind of changes in their chemical composition (energy characteristics of such explosive compounds are close to the parameters of TNT).

At the same time, studies have shown that with the introduction of certain changes to their chemical composition, the existing technology for obtaining ballistite powders and solid propellants permits obtaining industrial explosives with improved characteristics. With this technology it is also possible to produce versatile elastic shaped charges from nitroglycerin powders for performing many applied tasks (parting metal structures and concrete and reinforced concrete masses, explosion welding of dissimilar metals), and charges made of special powders of the ballistite type for signal flares.

Shaped charges of this type are used in recycling such metal-intensive and technologically ineffective kinds of military equipment as ships, submarines and armored vehicles, i.e., in this case we have the effect of double recycling.

A promising direction of converting condensed energy systems is the development and use of solid-propellant gas generators and pressure bottles for commercial purposes. Their merits are high reliability, compactness, constant readiness for work, fast operation and autonomy.

We will enumerate only some of the directions of work and areas of application of equipment models being developed:

- stimulating oil production through thermal-gas-chemical stimulation of the formation zone near the well by products of combustion of solid propellant charges;
- using gas generators as sources of high-temperature compressed gas for cutting pipes in exploratory and exhausted wells;
- using autonomous solid-propellant power sources in systems for emergency remote control of gas main and local gas pipeline valving;
- using cartridge-pressure accumulators in firefighting systems (local and mobile) for intensive displacement of fire-extinguishing liquids from containers;
- use of solid-propellant hot gas generators in systems for low-temperature emergency starting of diesel engines (under conditions of Siberia, Far North, Arctic, Antarctic);
- using powder charges in devices for emergency protection of the automobile driver.

The problem of converting the chemical energy of solid propellants into electrical and light energy is of great theoretical and practical interest.

The development of special plasma fuels whose combustion products possess heightened conductivity permitted creating powerful solid-propellant impulse sources of electrical energy—magnetohydrodynamic generators (MHD-generators). The energy produced by them has found use

for studying the Earth's crust on dry land and on the marine shelf, exploring and prospecting for oil and gas fields and forecasting earthquakes.

The search for ways of directly using the part of armament equipped with articles based on condensed energy systems for performing nonmilitary tasks is of great interest. The fundamental possibility, and under certain conditions sufficient effectiveness, of direct use of authorized munitions (artillery rounds, mineclearing charges) in the mining industry has been proven.

There is experience in using special solid propellant engines in construction and assembly work (cutting vertical shafts for laying column foundations, cutting horizontal channels when laying pipes and communications beneath railroad embankments, drilling wells under field conditions).

Work begun in recent years to create a multipurpose missile-space system based on SS-20 and SS-25 military solid-propellant missiles being removed from alert duty for inserting small spacecraft weighing up to one tonne into orbit is promising. The press reported the successful conduct of the first flight test of this system last year.

Technology created in Russia for obtaining composite solid propellants permits reliably producing charges for various purposes with required dimensions and configurations and with given physicomechanical and energy characteristics for power plants of military and commercial rockets, space objects, aerosol fire-extinguishing generators and MHD-generators.

Equipment used in this industry finds application for the manufacture of commercial products: construction materials (polymer concrete), medicinal preparations, synthetic detergents and fertilizers.

The Russian raw material base permits producing solid-propellant charges and engines with ecologically clean combustion products based on a new, chlorinefree oxidizer—ammonium dinitronitrogen [ammoniydinitroazot].

The problem of the harmful effect of missile launches on the environment also exists in other countries that develop and manufacture missile equipment. In our view, U.S. launches of the Space Shuttle, equipped with two solid-propellant booster engines with charges weighing around 1,000 tonnes, are by no means inoffensive. Each such launch is accompanied by the ejection of more than 200 tonnes of hydrogen chloride into the atmosphere, which is far from harmless to the environment.

There is one other major problem in the area of conversion of condensed energy systems, that of developing and realizing ecologically safe methods of eliminating (recycling) solid-propellant engines of military missiles. This task became especially urgent after Russia and the United States signed an international agreement on a significant strategic arms reduction (START II).

The destruction of intermediate and shorter range missiles (including the SS-20) was accomplished basically by detonation and incineration methods and was accompanied by the ejection into the atmosphere of a considerable quantity of ingredients harmful to man and nature (hydrogen chloride, aluminum oxides, and products of the destruction of missile sustainer engine cases).

The scale of upcoming work in the next few years and increased demands for environmental protection prompt us and (it seems to us) our partners to search for and develop ecologically safe industrial methods for recycling solid-propellant missile engines. This technically complex, important problem merits wider special discussion.

And in conclusion, about conversion of scientific research. There are interesting solutions in this area.

Under the direction of Academician V. A. Tartakovskiy, a major specialist in the area of synthesis of condensed energy systems, methods have been found for processing TNT, the high explosive existing in largest amounts, into polymers and dyes.

Scientists of a Siberian institute under the direction of Academician G. V. Sakovich together with scientists of the Russian Academy of Sciences Siberian Department Hydrodynamics Institute have developed an explosive method of obtaining ultrafine diamonds from the carbon of explosives being detonated.

Research which has been conducted for many years in the Russian Academy of Sciences Institute of Chemical Physics under the direction of Russian Academy of Sciences Corresponding Member A. G. Merzhanov in the area of combustion of explosives, powders and solid propellants led to the discovery of a new, highly effective method of obtaining refractory materials. There also are other similar examples.

Topics representing special international interest within the scope of the "condensed energy systems" problem include those such as development of ecologically safe technologies for recycling munitions, methods of reducing the sensitivity of explosives and compounds obtained here, creation of solid propellants based on ammonium nitrate, commercial use of ammonium perchlorate and others.

The past symposium represents a new step toward cooperation of scientists of leading world countries in successfully solving difficult conversion problems.

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8 Mar 95